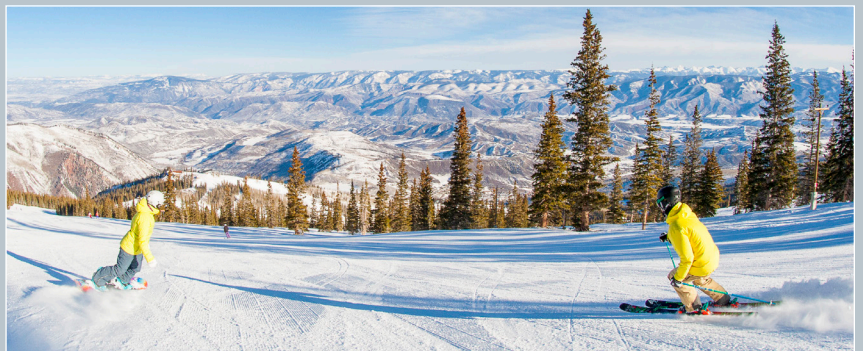
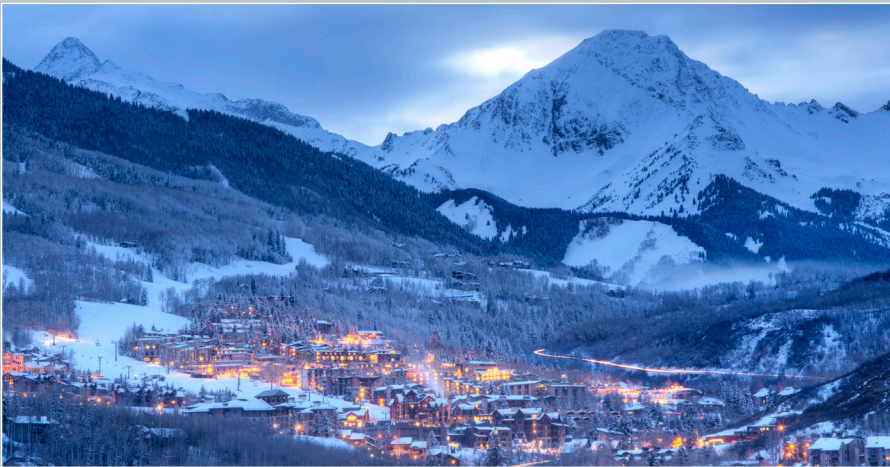




SNOWMASS SNOWMAKING AND ELK CAMP MEADOWS PROJECTS

ENVIRONMENTAL ASSESSMENT FINDING OF NO SIGNIFICANT IMPACT DRAFT DECISION NOTICE

December 2018



USDA Forest Service
Rocky Mountain Region
White River National Forest



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List of Hyperlinks Provided in this EA

EMBEDDED LINK	URL
<u>2002 WRNF Land and Resource Management Plan</u>	https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_000999.pdf
<u>2015 Snowmass Mountain Master Development Plan</u>	https://www.fs.usda.gov/detail/whiteriver/landmanagement/planning/?cid=STELP_RDB5333326
<u>40 CFR § 1502.25[b]</u>	https://www.gpo.gov/fdsys/pkg/CFR-1996-title40-vol18/pdf/CFR-1996-title40-vol18-sec1502-25.pdf
<u>40 CFR § 1508.27</u>	https://www.gpo.gov/fdsys/pkg/CFR-2012-title40-vol34/pdf/CFR-2012-title40-vol34-sec1508-27.pdf
<u>Built Environment Image Guide</u>	https://www.fs.fed.us/recreation/programs/beig/
<u>Clean Water Act</u>	https://www.epa.gov/sites/production/files/2017-08/documents/federal-water-pollution-control-act-508full.pdf
<u>Executive Order 11990, Protection of Wetlands</u>	https://www.archives.gov/federal-register/codification/executive-order/11990.html
<u>Forest Plan</u>	https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_000999.pdf
<u>FSM 2670.32</u>	https://www.fs.fed.us/cgi-bin/Directives/get_dirs/fsm?2600!..
<u>Notice of Proposed Action</u>	https://www.fs.usda.gov/nfs/11558/www/nepa/109878_FSPLT3_4405747.pdf
<u>Post Independent</u>	http://classifieds.postindependent.com/category/Legals
<u>project website</u>	https://www.fs.usda.gov/project/?project=54555

Acronyms and Abbreviations

ASC	Aspen Skiing Company	SMMDP	Snowmass Mountain Master Development Plan
ATV	All Terrain Vehicle	SUP	Special Use Permit
BA	Biological Assessment	TEP	Threatened, Endangered and Proposed
BE	Biological Evaluation	USACE	United States Army Corps of Engineers
BEIG	Built Environment Image Guide	USDA	United States Department of Agriculture
BMP	Best Management Practices	USDI	United States Department of the Interior
CDA	Connected Disturbed Area	USEPA	United States Environmental Protection Agency
CDPHE	Colorado Department of Public Health and Environment	USFWS	United States Fish and Wildlife Service
CEQ	Council on Environmental Quality	USGS	United States Geological Survey
CFR	Code of Federal Regulations	WCPH	Watershed Conservation Practices Handbook
CFS	Cubic Feet per Second	WIZ	Water Influence Zone
CPW	Colorado Parks and Wildlife	WRNF	White River National Forest
CWA	Clean Water Act		
CWCB	Colorado Water Conservation Board		
DAU	Data Analysis Units		
DN	Decision Notice		
EA	Environmental Assessment		
FONSI	Finding of No Significant Impact		
FSM	Forest Service Manual		
GDC	General Design Criteria		
GMU	Game Management Units		
ID Team	Interdisciplinary Team		
MDP	Master Development Plan		
NEPA	National Environmental Policy Act		
NFS	National Forest System		
NOPA	Notice of Proposed Action		
NWP	Nationwide Permit		
PDC	Project Design Criteria		

Chapter 1.

Purpose and Need

1.1 INTRODUCTION AND BACKGROUND

The White River National Forest (WRNF) has prepared this Environmental Assessment (EA) in compliance with NEPA and other relevant federal and state laws and regulations. This EA contains analyses consistent with National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations, and Forest Service policy. It discloses potential direct, indirect, and cumulative environmental effects on the human and biological environment anticipated to result from implementation of the Proposed Action. Additionally, it is intended to ensure that planning reflects the opportunities and constraints posed by the immediate and surrounding area and that it minimizes potential resource conflicts.

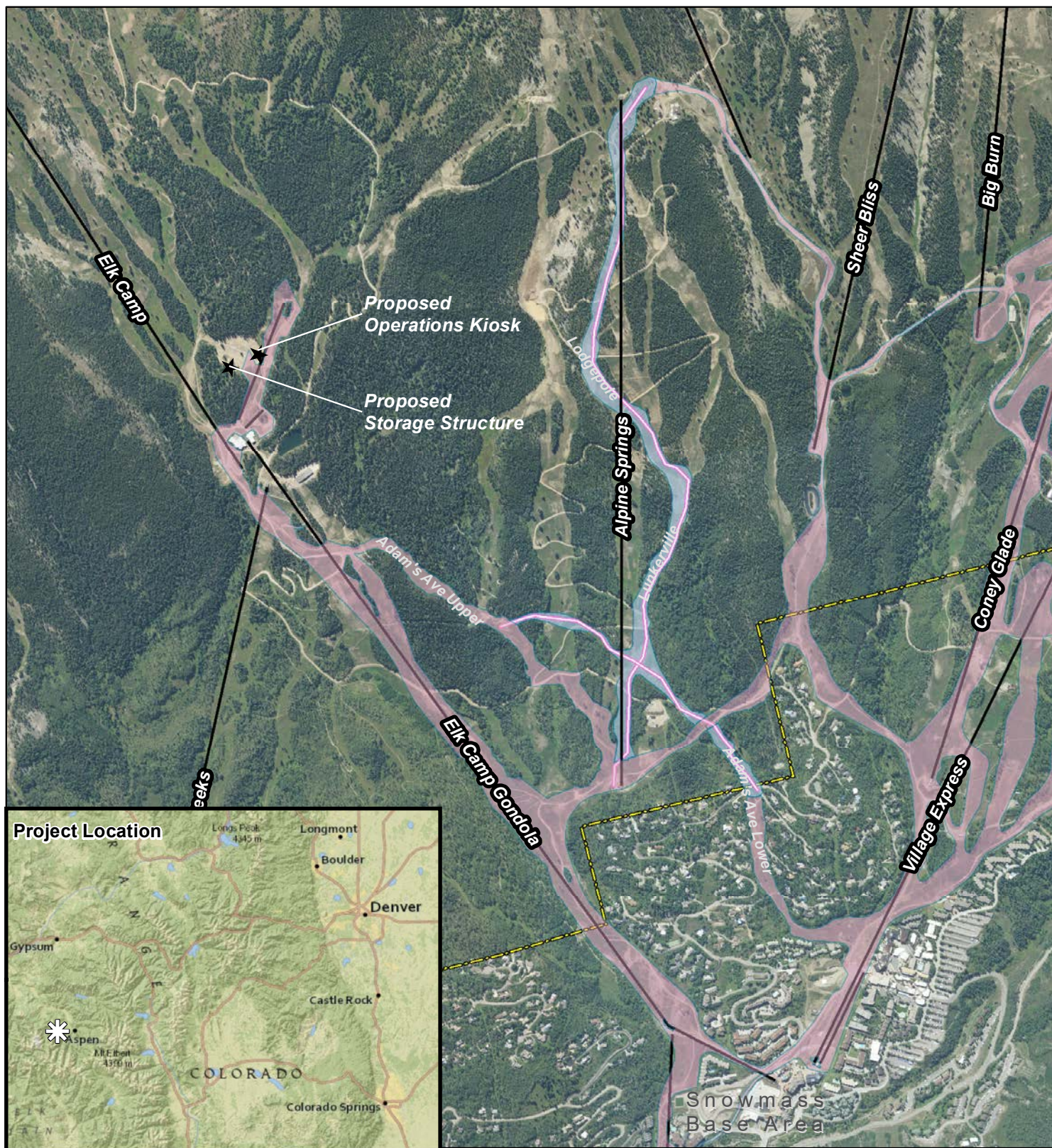
Snowmass Ski Area (Snowmass) is owned and operated by Aspen Skiing Company (ASC). The ski area is located in Snowmass Village and approximately 115 miles southwest of Denver, CO (refer to **Figure 1**). Snowmass operates on National Forest System (NFS) land that is managed by the Aspen-Sopris District of the WRNF under a special use permit (SUP). The [2002 WRNF Land and Resource Management Plan](#) (Forest Plan) provides general standards and guidelines for Snowmass' activities and operations on NFS lands. The SUP and associated summer and winter operating plans, as well as other resource management documents, provide more specific guidance for ski area operations and projects.

The proposed additional snowmaking coverage and Elk Camp Meadows operations kiosk are included in the accepted [2015 Snowmass Mountain Master Development Plan](#) (SMMDP). The Forest Service has identified a need to improve the organization and appearance of materials stored in the Elk Camp Meadows area and proposes to construct a storage structure near the tubing hill. All project components are within the existing SUP area (**Figure 1**).

1.2 PURPOSE AND NEED OF THE PROPOSED ACTION

In its 2015 SMMDP, ASC identified a need for additional snowmaking coverage to address the winter recreation experience at Snowmass, as well as the need for storage and operational improvements. The Forest Service, through acceptance of ASC's 2015 SMMDP and internal scoping, has identified the need for:

- ◆ **Reliable and consistent snow coverage on *Lodgepole, Lunkerville, and Adam's Avenue*, especially during the early and late parts of the season and years of below average snowfall**
- ◆ **Improved organization and visual appearance of operations and stored materials in the Elk Camp Meadows area**



Snowmass Snowmaking and Elk Camp Meadows Projects Environmental Assessment

*Figure 1
Proposed Action Alternative*

Legend

Existing

- Lifts
- Snowmaking
- SUP Boundary

Proposed

- Snowmaking Lines
- Snowmaking Coverage
- Elk Camp Facility



0 750 1,500'

The existing conditions driving these needs are further described in this document.

1) Provide reliable and consistent snow coverage on Lodgepole, Lunkerville, and Adam's Avenue, especially during the early and late parts of the season and years of below average snowfall

Snowmaking occurs on approximately 260 acres on the lower mountain, primarily in the areas of Elk Camp and Sam's Knob (ASC 2015). However, the Alpine Springs area, which is also located on the lower mountain, does not have snowmaking except for the area surrounding the bottom terminal of the Alpine Springs lift. Inconsistent snow conditions occur on trails within the Alpine Springs area during the early and late parts of the ski season, as well as years with below average natural snowfall. Trails with inconsistent coverage include: *Lodgepole*; *Lunkerville*; the segment of *Adam's Avenue* between the top terminal of the Elk Camp Gondola and the Alpine Springs lift; and the segment of *Adam's Avenue* between the Alpine Springs and Snowmass Mall areas.

There is a need to install snowmaking in these areas to provide a predictable snow base to augment natural snow under these conditions.

2) Improved organization and visual appearance of operations and stored materials in the Elk Camp Meadows area.

Snow tubing is available daily in Elk Camp Meadows throughout the ski season. Currently, guests who arrive at the tubing area without having purchased tubing hill tickets must walk back to the Elk Camp Gondola to do so. In addition, tubes and other related equipment are stored outside, exposed to weather and visible to guests.

Ullr Nights takes place at Elk Camp Meadows each Friday night throughout the winter season. Activities include live music, food and beverage, and snow tubing and biking. Materials and tools used for Ullr Nights including firewood, a log splitter, fire pans, and other tools are currently stored year-round in an area that is visible and appears disorganized to winter and summer guests.

There is a need to provide covered storage for the materials for Ullr Nights while screening these materials from view. There is also a need to allow tubing guests to purchase tickets on site and create a more visually organized appearance in the Elk Camp Meadows area.

ULLR NIGHTS
MATERIALS CURRENTLY
STORED UNDER
TREELINE TRIAL
CHALLENGE COURSE



1.3 PUBLIC INVOLVEMENT AND IDENTIFICATION OF ISSUES

In August of 2018, a [Notice of Proposed Action](#) (NOPA) was mailed to 57 community residents, interested individuals, public agencies, tribal governments, and other organizations. This notice was specifically designed to elicit comments, concerns, and issues pertaining to the Proposed Action. A legal notice was published on August 23, 2018 in the newspaper of record for the WRNF, the [Post Independent](#), announcing the opportunity to comment on the Proposed Action.

A total of ten comment letters were received, including two distinct letters from a single commenter. The Forest Service considered the information gathered through public scoping along with the input of the Forest Service Interdisciplinary Team (ID Team) in identifying specific resources that require in-depth analysis.

Resources and issues that are analyzed in detail in this EA are included in **Table 1**.

Table 1. Issues Analyzed in Detail

RESOURCE AREA	ISSUE
Wildlife and Aquatics	Depletions associated with proposed snowmaking may affect Colorado big river fish. Construction activities have the potential to impact elk calving.
Vegetation	Construction activities have the potential to impact sensitive moonwort, and to introduce non-native, noxious, and invasive plants.
Wetlands	Ground disturbing activities proximate to wetlands may affect the function of wetlands within the project area.
Watershed and Soils	ASC's existing water rights and storage infrastructure for snowmaking water must be able to sufficiently accommodate the proposed snowmaking. Ground disturbance for installation of snowmaking infrastructure along with the expansion in snowmaking coverage could increase erosion and runoff, leading to a loss of organic matter and affecting stream health.
Recreation	The Proposed Action would improve skiing conditions on the mountain and improve the guest experience at Elk Camp Meadows.

1.4 DECISION TO BE MADE

Based on Forest Service and external public scoping, and evaluation of the context and intensity factors contained in [40 CFR § 1508.27](#), the Forest Service determined that an EA would be necessary to review, analyze, and document the potential impacts to the human and biological environment anticipated to result from the implementation of the proposed projects. This EA is a disclosure rather than a decision document and details the site-specific environmental analysis for the Proposed Action.

Based on the analysis documented within this EA, the Responsible Official (Scott Fitzwilliams, WRNF Forest Supervisor) will decide whether to allow implementation of the Proposed Action in whole or in part. The Responsible Official is not limited to allowing the Proposed Action or not, but may develop an entirely new alternative created from components of the Proposed Action analyzed in this EA. The decision document will include a determination of the significance of the effects and assess the decision's consistency with the [Forest Plan](#). Should a Finding of No Significant Impact (FONSI) determination be reached, a decision by the Responsible Official would be documented in a Decision Notice.

In addition to determining whether or not to approve the implementation of the Proposed Action analyzed in this document, the Responsible Official will also specify conditions of approval to be implemented with the selection of an action alternative. The Responsible Official may also require additional Project Design Criteria (PDC) and/or best management practices (BMP) not discussed within this document. The responsible official may also require monitoring of PDC.

1.5 CONSISTENCY WITH FEDERAL, STATE, AND LOCAL POLICY

As part of this analysis, the Proposed Action and Purpose and Need were reviewed to determine consistency with management goals, objectives, and standards and guidelines that are general requirements for the administration of NFS lands as set forth by the [Forest Plan](#), revised in 2002.

Decisions by jurisdictions to issue or not issue approvals related to this proposal may be aided by the analyses presented in this EA (per [40 CFR § 1502.25\[b\]](#)). While the Forest Service assumes no responsibility for enforcing laws, regulations, or ordinances under the jurisdiction of other governmental agencies, Forest Service regulations require permittees to abide by applicable laws and conditions imposed by other jurisdictions.

Chapter 2.

Description of Alternatives

This chapter describes the alternative considered within this environmental analysis and provides both the Responsible Official and the public with a clear understanding of the Proposed Action. PDC included to lessen or avoid anticipated Proposed Action implementation impacts are also outlined. Alternatives considered but eliminated are described in the *Issues, Resources, and Alternatives Considered but Not Carried Forward* document, located in the project file.

2.1 PROPOSED ACTION

The Snowmass Snowmaking and Elk Camp Meadows Projects consist of (1) snowmaking to address inconsistent snow conditions in the Alpine Springs area; and (2) the construction of two facilities in Elk Camp Meadows to address operational and storage needs. Both projects are within the existing Snowmass SUP (**Figure 1**). Pending Forest Service approval, ASC anticipates that construction could begin during the summer of 2019.

2.1.1 Snowmaking on Lodgepole, Lunkerville, and Adam's Avenue

To address inconsistent snow conditions within the Alpine Springs area, snowmaking is proposed on *Lodgepole*, *Lunkerville*, and *Adam's Avenue* (**Figure 1**). Approximately 1.5 miles of 8-inch-diameter steel water and air pipeline would be installed along the west side of *Lodgepole* and extending along lower *Lunkerville* to the bottom terminal of the Alpine Springs lift. Another approximately 0.7 mile of pipeline would be installed from the existing snowmaking line at the intersection of *Adam's Avenue* and *Slider* and continuing on *Adam's Avenue* to tie into the

existing *Adam's Avenue* snowmaking line located at the SUP boundary. The total amount of snowmaking would include approximately 2.1 miles of pipeline and 33 acres of coverage.

Construction Practices

The snowmaking pipelines would be buried within a 5-foot-deep trench located approximately 40 feet from the trail edge. Approximately 70 hydrants and/or electric pedestals, spaced approximately 150 feet apart, would be placed along the trail edge and connected to the main snowmaking pipeline by 2-inch-diameter buried lateral piping. Approximately 0.8 mile of high voltage electrical wire would be installed within a 3-foot-deep trench parallel to the main snowmaking pipeline trench and connecting to nearby Holy Cross Energy transformers, where available.

All ground disturbance would be contained within a 40-foot-wide construction corridor along the snowmaking pipeline alignment, for a total approximate disturbance of approximately 10 acres. No tree removal would be required, and all disturbed areas would be revegetated according to approved project vegetation and restoration plans.

A portion of the proposed snowmaking pipeline near the top terminal of the Alpine Springs lift would cross an armored intermittent stream channel but would avoid wetlands adjacent the stream channel upstream and downstream of the crossing. The disturbance corridor width would be minimized in the area of the crossing, clay-cutoff walls or similar technology would be installed in the pipeline trench to prevent

dewater of adjacent wetlands, and the streambed armoring would be replaced following construction (refer to **Table 2**).

2.1.2 Elk Camp Meadows Facilities

To provide storage and improve operations, two facilities would be constructed in the vicinity of Elk Camp Meadows (**Figure 1**). The first facility would be a storage structure that would be used to store materials used for Ullr Nights. This storage structure would be approximately 600 square feet and located on the eastern edge of the Magic Carpet tubing area, below the intersection of *Bear Bottom* and *Gunner's View*. Ski area personnel would occasionally access the storage structure and the top of the existing magic carpet with trucks in the summer; winter access will be via snowmobile. The storage structure would be constructed with natural wood and/or corten-type siding with a metal roof and would conform to the Forest Service's [Built Environment Image Guide](#) (BEIG).

The second proposed facility would be an operations kiosk located near the tubing hill base area. The operations kiosk would contain ticketing equipment, as well as provide storage for tubing equipment. Similar to the proposed storage structure, the operations kiosk would be approximately 600 square feet in size, constructed with

natural wood and/or corten-type siding and a metal roof, and would conform to the BEIG.

Both the proposed storage structure and operations kiosk would be constructed in previously cleared areas requiring minimal grading. No tree clearing would be required.

2.1.3 Project Design Criteria

General Design Criteria (GDC) and PDC would be applied to avoid and minimize potential resource impacts from construction and operation of the Proposed Action. GDC are located on the [project website](#). PDC are identified in **Table 2**. This list supplements the list of best management practices (BMPs) that ASC will be required to prepare for Forest Service prior to the start of construction and implementation.

PDC are site- and project-specific design criteria developed through the analysis of the project.

GDC are practices common to ski area projects across the WRNF.

Table 2. Project Design Criteria

PROJECT PHASE	PROJECT DESIGN CRITERIA
General	<ol style="list-style-type: none"> 1) All proposed activities and facilities shall meet WRNF Forest Plan and all applicable agency management direction (e.g., Forest Service Handbook and Manual) for all affected resource areas. 2) Prior to starting construction activities on NFS lands, ASC shall develop a Construction Implementation Plan for Forest Service review and authorization. All proposed construction methodologies and practices will be reviewed for compliance with the decision and resource management direction. This plan shall include the following information: <ul style="list-style-type: none"> • <u>Construction Management</u>: Project timelines, project contracts, disturbance boundaries, grading and site plans, staging and parking areas, waste management including reduce/reuse/recycle, construction access, and any required survey information • <u>Waste Management</u>: specific methodology for reducing, re-purposing, or recycling waste • <u>Erosion Control and Drainage Management</u>: erosion control and drainage management activities • <u>Post-Construction Revegetation and Restoration</u>: methodology, locations, vegetative mixes, and soil amendments • <u>Noxious Weed Management</u>: weed control methodologies including equipment cleaning, pretreatment, and post-construction monitoring and treatment • <u>Best Management Practices</u>: resort BMP list to be employed and adhered to during project implementation 3) ASC shall obtain all required county, town, and state permits prior to the start of construction.
Pre-Construction	<ol style="list-style-type: none"> 1) For ski trails where new snowmaking would occur, the total length of each trail exhibiting rill erosion and gully erosion shall be identified. Drainage improvements to prevent increased gully erosion from the additional runoff associated with proposed snowmaking shall be identified as required by Forest Plan Standard. 2) For ski trails where new snowmaking would occur, the total area of each ski trail where 8.5 Forest Plan Soil Standard 1 and Guideline 1 for ground cover are not met shall be identified with measures for increasing ground cover to desired levels.
During Construction	<ol style="list-style-type: none"> 1) To minimize disturbance to the intermittent stream crossing near the top terminal of the Alpine Springs lift: <ul style="list-style-type: none"> • The snowmaking pipeline disturbance corridor width shall be minimized in the area of the intermittent stream crossing • The streambed armoring shall be replaced following placement of the snowmaking pipeline • ASC shall comply with all conditions of a United States Army Corps of Engineers Nationwide Permit 12, including installing clay-cutoff walls or similar technology in the pipeline trench to prevent dewatering of adjacent wetlands • ASC shall provide written notification to the Forest Service at least two weeks in advance of installing the pipeline through the stream. • ASC shall coordinate with Forest Service personnel to mark grading limits, de-water the construction site, stockpile excavated materials and rehabilitate the crossing. 2) To protect elk calving and fawning, construction of the Elk Camp Meadows facilities shall not occur between May 15 to June 20.

Table 2. Project Design Criteria (cont.)

PROJECT PHASE	PROJECT DESIGN CRITERIA
During Construction (cont.)	<p>3) To improve existing drainage on mountain roads and to reduce Connected Disturbed Areas in the study watersheds:</p> <ul style="list-style-type: none"> • In the locations specified on Figure 2, improve/construct road ditches and cross drains to limit flow to ditch capacity and prevent erosion and failure. Install road-relief culverts or road waterbars at a spacing adequate for the road slope and ditch characteristics. Adhere to WRNF guidelines for recommended spacing between relief culverts. • In the location specified on Figure 2, design, implement, and maintain standards sediment control BMPs (e.g., sediment traps) at the discharge of roadside ditches. Where possible, discharge runoff into well vegetated areas, away from ephemeral and intermittent channels. <p>4) To manage snowmelt runoff on the ski trails proposed for snowmaking and reduce existing bare ground:</p> <ul style="list-style-type: none"> • In the locations specified on Figure 2, apply soil amendments and Forest Service-approved seed on approximately 0.1 acre of areas of existing rill and gully erosion to foster successful revegetation and restore eroded trail surface. • Evaluate construction of waterbars on <i>Adam's Avenue</i> and <i>Lunkerville</i> ski trails • Construct ski trail waterbars to intercept and control velocities of surface runoff. Discharge waterbars through adequate BMPs for erosion control in the forested areas adjacent to the ski trail.
Post Construction	<p>1) To improve existing drainage on mountain roads in the study watersheds:</p> <ul style="list-style-type: none"> • In the locations specified on Figure 2, inspect and maintain BMPs a minimum of twice annually: (1) in the spring, as soon as conditions allow; and (2) in the fall season, before snow covers the ground. <p>2) To manage snowmelt runoff on the ski trails proposed for snowmaking:</p> <ul style="list-style-type: none"> • Implement a BMP maintenance program to inspect, clean, and repair or replace BMPs for erosion and sediment control, at least twice annually: as soon as snowmelt conditions allow; and at the end of the summer, before snow covers the ground. <p>3) Following implementation of the proposed snowmaking, inspect the ski trails where man-made snow applications occur during the snowmelt season to determine if BMPs are functioning as designed, or if additional BMPs are needed</p>

Chapter 3.

Affected Environment and Environmental Consequences

This section describes the existing environment and environmental consequences for resources across the human and biological environments that have the potential to be affected by implementing either of the alternatives. *Direct effects* are caused by the action and occur at the same time and place. *Indirect effects* are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable (i.e., likely to occur within the duration of the project). *Cumulative effects* are the result of the incremental direct and indirect effects of any action when added to other past, present, and reasonably foreseeable future actions, and can result from individually minor but collectively significant actions taking place over a period of time.

The line officer approved the following resources to be considered in detail in this analysis, based on an understanding of the proposal, familiarity of the project area, and analysis of the issues raised in scoping: recreation, wildlife and aquatics, vegetation, wetlands, and watershed and soils.

Technical reports providing detailed information on each resource analyzed in this EA were completed by specialists to inform the analysis and are summarized within each resource section. The entire project file can be found at the Aspen-Sopris Ranger District office of the WRNF, available upon request.

3.1 RECREATION

3.1.1 Affected Environment

The scope of this analysis extends to winter recreational opportunities at Snowmass on NFS lands within the ski area's approximately 4,745-acre SUP boundary, and focuses on the Alpine Springs and Elk Camp Meadows areas where the proposed projects would occur. Together with market demand and growing expectations of the public, the ski area has been continuously upgraded since winter operations commenced in 1967, enabling Snowmass to provide its guests with a wide variety of ski terrain (e.g., teaching terrain, gladed tree skiing, chutes and bowls, etc.) throughout the SUP boundary. Summer use of the project area, beyond what already occurs in the Elk Camp Meadows area, is not included in the Proposed Action.

Alpine Springs Area

The Alpine Springs area of Snowmass contains a total of 1,238 acres of skiable terrain and ranges in elevation from slightly below 9,000 feet above mean sea level (amsl) to slightly above 10,500 feet amsl. It contains a large portion of the intermediate/cruiser terrain available at Snowmass. The area is mostly composed of traditionally cleared intermediate trails interspersed with dense forest inter-trail tree islands. Two lifts primarily serve this area: the Elk Camp Gondola and the Alpine Springs lift. In addition, many skiers utilize this terrain to return to the Snowmass Base Village after skiing on other sections of the mountain such as High Alpine Mountain and

Elk Camp Mountain. The trails within the area, particularly *Adam's Avenue*, also serve as an important connector between the top of the Elk Camp Gondola and the Snowmass Base Village.

Snowmaking occurs already on sections of the lower mountain like Elk Camp and Sam's Knob (ASC 2015); however, the Alpine Springs area does not currently have snowmaking except near the bottom terminal of the Alpine Springs lift (**Figure 1**). Given the area's relatively low elevations as well as its high traffic, inconsistent snow conditions often occur during the early and late parts of the ski season, as well as in years with below average natural snowfall. This can result in thin snow patches interlaced with dirt, soft and very wet snow, and rock hazards being present. Skiers must therefore navigate the poor snow conditions, which affects skier speeds and patterns and poses challenges for skier circulation. This affects the recreation experience of those who use the area.

Elk Camp Meadows

The Elk Camp Meadows area is located near the top terminals of the Elk Camp Gondola and Two Creeks lift, as well as near the bottom terminal of the Elk Camp lift. A variety of trails terminate adjacent to the area including *Bear Bottom*, *Gunner's View*, and *Grey Wolf*. The area includes the Elk Camp Meadows Learning Area as well as the Magic Carpet tubing area. Skiing guests travel through the area as they descend from Elk Camp Mountain to use the Elk Camp lift or travel lower towards the base area. The area is also utilized by non-skiing guests for snow tubing and Ullr Nights. To participate in snowtubing, guests currently must purchase tickets prior to walking to the snowtubing hill. Guests who have arrived at the snowtubing area without previously purchasing tickets must walk back to the

gondola to do so and cannot purchase tickets on site.

Ullr Nights is a Friday night series of activities over the course of the winter that includes live music, food and beverage, and snow tubing and biking. Materials used for Ullr Nights (including firewood, a log splitter, fire pans, and other related equipment) are stored directly beneath the Treeline Trial Challenge Course and are exposed to weather and visible to guests. This makes the area appear disorganized to winter and summer guests, impacting the recreational experience within the area.

3.1.2 Environmental Consequences of the Proposed Action

Alpine Springs Area

Under the Proposed Action, snowmaking coverage in the Alpine Springs area would increase by 33 acres. Coverage would extend specifically along *Lodgepole*, *Lunkerville*, and *Adam's Avenue*. Installing additional snowmaking along these trails would allow ASC to develop a predictable snow base to augment natural snow conditions. Providing a predictable snow base in the early or late season, or in years with below average natural snowfall, would benefit skiers throughout the Alpine Springs area by reducing thin patches of snow, dirt, and rock and improving circulation issues caused by poor snow quality on certain sections of the trails. Skiers would encounter easier, more firm snow conditions as well as expanded snow coverage on each trail. Skiers accessing the intermediate terrain within the Alpine Springs area would also have extended access (both earlier in the early season and later in the spring) to the terrain relative to existing conditions in years with low snow. Skiers utilizing the terrain to access the Snowmass Base Village or other sections of the mountain would also benefit from

improved snow coverage. Snowmaking on *Adam's Avenue* specifically would provide adequate early- and late-season coverage from the top of the Elk Camp Gondola to the Snowmass Base Village, improving the guest experience for the numerous skiers who use this route.

Elk Camp Meadows

The Proposed Action would improve the recreational experience for users within the Elk Camp Meadows area by a) allowing guests who have not purchased tickets in advance to purchase tickets at the base of the tubing hill through the proposed operations kiosk instead of having to walk back to the Elk Camp Gondola and b) providing a more organized visual appearance of the area as well as protecting tubes from the weather. Guests exploring the area who choose to go tubing spontaneously could purchase tickets while at the tubing hill instead of having to walk out of their way to do so. Tubes would also be kept protected from the weather within the proposed storage structure, increasing the likelihood of snow tubes remaining in good condition. Those within the area, including wintertime skiers and summer guests participating in the Treeline Trial Challenge Course, would also benefit from a more organized and open area to explore, as Ullr Nights activities equipment would be adequately contained and shielded from view. Construction of the facilities would occur during the summer and would involve minimal land and recreation disturbance. The facilities would be placed out of the way of existing trails and pathways to ensure little if any disruption to the existing guest experience.

3.1.3 Cumulative Effects

In combination with previously accepted and approved projects that are reasonably foreseeable, and past projects that have been implemented at Snowmass, the proposed projects would supplement existing winter recreation opportunities by increasing snow quality and quantity on terrain important for intermediate progression as well as transportation to the Base Village. The proposed projects would also increase ease of use of the Elk Camp Meadows for tubing and Ullr Nights activities. It is anticipated that when combined with the recreation opportunities provided by past projects, the Proposed Action would have a combined beneficial impact on the recreation resource within the existing SUP area.

3.2 WILDLIFE AND AQUATICS

3.2.1 Affected Environment

The Biological Assessment (BA) includes detailed information regarding federally listed threatened, endangered, and protected (TEP) terrestrial and aquatic wildlife species that may occur or could potentially be affected by the Proposed Action (Western Bionomics 2018b). Sensitive species whose population viability has been identified as a concern by the WRNF are analyzed in the Biological Evaluation (BE) (Western Bionomics 2018a). The following discussion summarizes information specific to TEP species (four species of Upper Colorado River fish), WRNF-specific sensitive species (Western bumblebee), and species of local concern (elk). Impacts to lynx are analyzed in the BA; no lynx habitat would be impacted therefore no impacts to lynx would occur and this species is not discussed further in this analysis.

Upper Colorado River Fish

The Upper Colorado River Basin is home to the USFWS-listed endangered bonytail chub (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), and razorback sucker (*Xyrauchen texanus*). These fish are found only in the Colorado River system. None of the four endangered fish are found any closer to the project than the main stem of the Colorado River near Rifle, Colorado; however, activities resulting in water depletions in the Upper Colorado River Basin may impact the continued survival of the four endangered fish (USFWS 1999).

In 1995, the WRNF received a Biological Opinion from the USFWS relative to proposed depletions for snowmaking and on-mountain facilities that were included in Snowmass's previous MDP, and this Biological Opinion contained a determination of *may affect, is likely to adversely affect* the four Upper Colorado River fish. The Biological Opinion concluded that the reasonable and prudent measures that were incorporated in the MDP at the time of consultation and subsequently incorporated into Snowmass's operations would offset jeopardy to the endangered Colorado River fish. There were 84.2 acre-feet of depletions authorized in 1995. To date, Snowmass has utilized 37.97 acre-feet of the depletions authorized in 1995.



CLOCKWISE FROM TOP LEFT:
BONYTAIL CHUB, HUMPBAC CHUB, RAZORBACK SUCKER, COLORADO PIKEMINNOW

Western Bumblebee

The western bumblebee (*Bombus occidentalis*) was historically broadly distributed from the west coast of North America, east through Alberta and western South Dakota, and south to Arizona and New Mexico, although it has undergone severe recent declines in distribution and abundance. Because bumblebees thrive in high latitude and high elevation locations, the Rocky Mountain Region has a high species richness of bumblebees—there are records from 22 *Bombus* spp. on forests across the region. Of all of those species, the western bumblebee is the second most abundant species; however, the relative abundance over the last ten years has declined within the region (Torreta 2013).

While the causes of the decline of the western bumblebee are not fully understood, likely candidates include habitat fragmentation, overgrazing, pesticide use, reduced genetic diversity, introduction of nonnative pathogens, competition with honey bees, and climate change. Habitat fragmentation is the leading cause of bumblebee declines in Europe but has not been documented in North America; however, since bumblebees nest and overwinter under or at ground level, any ground disturbance has the potential to destroy nesting and/or overwintering sites (Hatfield et al. 2012). The Proposed Action is located within western bumblebee habitat.

Elk

Colorado Parks and Wildlife (CPW) estimates elk (*Cervus canadensis*) herd populations and sets management objectives at the scale of Data Analysis Units (DAU). Snowmass is located within DAU E-15, the Avalanche Creek DAU, which contains Game Management Units (GMU) 43 and 471. The 2017 post-hunt population estimate for E-15 was 4,330 elk, with a bull to cow ratio of 26:100 (CPW 2018). Both the population and sex ratio are within the range specified in the 2013 herd management plan (CPW 2013).

According to CPW's species activity maps, the project area provides summer range for elk and is located approximately half a mile to the west of mapped elk production range. Elk production range is mapped to the east of Snowmass in the East Fork Brush, Spring, and Owl Creek drainages. A Forest Supervisor's Order prohibits access within these drainages between May 15 and June 30 each year to prevent human recreational disturbance during the calving period. Furthermore, the Snowmass Multi-Season Recreation Projects Record of Decision included mitigation to prohibit construction in the Elk Camp area between May 15 and June 20 (USDA Forest Service 2017). Those seasonal closures will remain in effect for these projects.



LEFT TO RIGHT:
WESTERN BUMBLEBEE,
ELK

3.2.2 Environmental Consequences of the Proposed Action

Overall, the Proposed Action would be consistent with all wildlife and fisheries relevant direction provided by the [Forest Plan](#) and [FSM 2670.32](#).

Upper Colorado River Fish

Impacts to the Upper Colorado River fish, including the Colorado pikeminnow, razorback sucker, humpback chub, and bonytail chub, could occur due to the proposed snowmaking water depletions. The current diversions and subsequent depletions, as described previously, result in 37.97 acre-feet of depletions. The Proposed Action would require 6.2 acre-feet of new depletions; however, the depletion falls under the approval of the 1995 Biological Opinion and the USFWS confirmed no new consultation or determination is required (USFWS 2018). In addition, the Biological Opinion concluded that the reasonable and prudent measures, which were incorporated into the MDP at the time of consultation and subsequently incorporated into Snowmass's operations, would offset these potential impacts to the Upper Colorado River fish.

Western Bumblebee

The Proposed Action would disturb approximately 11 acres of forblands that provide potential nesting, overwintering, and/or foraging habitat for the western bumblebee. Individual colonies could potentially be destroyed during installation of the proposed snowmaking lines or Elk Camp facilities. Since habitat fragmentation is the leading cause of bumblebee declines in Europe, and may be a North American cause, and since bumblebees nest and overwinter under or at ground level, any ground disturbance has the potential to destroy nesting and/or overwintering sites. Since construction activities would disturb potential

forb habitat, the Proposed Action *may adversely impact individuals, but is not likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing.*

Elk

Direct impacts of the new snowmaking lines and Elk Camp facilities would be limited to decreased forage production on the approximately 10 acres of land to be disturbed. Impacts would be permanent in relation to the proposed Elk Camp facilities; however, within the proposed snowmaking alignment, impacts would only last for (one to three years following installation. Once reclamation reaches its full potential, forage production is expected to be equivalent to that which currently exists. At the scale of the DAU, temporarily decreased forage production within the alignment will not have adverse effects on elk survival, natality, or fecundity.

Potential indirect impacts of the project on elk relate to the possibility that noise and commotion associated with snowmaking line installation and facility construction might cause elk to avoid the vicinity of the project areas until installation is completed. However, if elk are temporarily displaced due to the noise and commotion associated with facility construction and snowmaking infrastructure installation, suitable habitat exists throughout the DAU to absorb the temporarily displaced animal(s). The snowmaking line alignment ranges in proximity to the mapped calving range from 0.22 mile to 0.59 mile; however, due to intervening terrain and vegetative screening, it is unlikely that elk would be displaced should snowmaking installation occur during the calving period. Construction during the calving period would be limited to ten days at a maximum, as construction is not permitted from May 15 to June 20 and the

calving period is approximately May 15 to June 30. While indirect effects may occur as avoidance of the western edge of the mapped calving area during construction, individual elk would not be likely to be harmed or killed, nor would newborn calves be abandoned, as a result. Therefore, the Proposed Action is not likely to have a significant direct, indirect, or cumulative impact on elk.

3.2.3 Cumulative Effects

In the past and present, residential and commercial expansion and development, along with increased recreation use, has fragmented habitat and/or decreased the effectiveness of available habitat for all species discussed in this analysis. Although minor direct and indirect impacts would occur to the Upper Colorado River fish, the western bumblebee, and elk, none of these impacts would be significant.

This conclusion is supported by the fact that relevant PDC (e.g., the construction ban between May 15 and June 20) would ensure that no significant impacts would occur. This is also true for TEP aquatic species, because the USFWS determined that Snowmass has incorporated reasonable and prudent measures into their MDP at the time of consultation, and subsequently incorporated into Snowmass's operations, to offset the potential impacts to the Colorado River fish.

Because no significant impacts would occur, no significant cumulative effect is possible when the Proposed Action is considered cumulatively with all past, present, and reasonably foreseeable future actions. Refer to the BA and BE for more detail regarding cumulative effects.

3.3 VEGETATION

3.3.1 Affected Environment

This analysis centers around the species listed by the Regional Forester as sensitive as described in the BE (Western Bionomics 2018a). Federally listed plant species described within the BA have been dismissed from detailed analysis in this EA due to lack of habitat within the project area (Western Bionomics 2018b). For a full list of sensitive plant species identified by the WRNF for which population viability is a concern, see the BE. Based on documented habitat affinities, two species were determined to have potential habitat in the project areas: Trianglelobe moonwort (*Botrychium ascendens*) and Colorado tansy-aster (*Machaeranthera coloradoensis*).

Moonworts (*Botrychium* spp.) are small, inconspicuous, and often ephemeral species which may not appear above the ground every year. Mixed species groups are also common; if one species is observed above ground, it is possible that other species may exist below ground at the same site and may remain undetected. Most moonworts are considered habitat generalists, and habitat types vary considerably between known sites. Common threats to this species include any ground disturbing activities (Beatty et al. 2003). Ski trail development through closed-canopy forests in Colorado appears to have benefited some moonwort species by creating potential habitat, as ski runs are known to provide habitat for some moonwort species when adequate time has passed following disturbance (Kolb and Spribille 2001 in Beatty et al. 2003).



LEFT TO RIGHT:
TRIANGLELOBE MOONWORT,
COLORADO TANSY-ASTER

Colorado tansy-aster has been found in montane to alpine environments from 7,675 to 12,940 feet in elevation, where it occupies grasslands, open areas in ponderosa or bristlecone pine, pinyon/juniper woodlands, alpine fellfields, and alpine meadows (Beatty et al. 2004). Within these areas, it grows on slopes, bluffs, ridges, flats, roadsides on calcareous sedimentary substrates (e.g., limestone, dolomite, and shale), volcanic, or granitic substrates. It is found in both dry and mesic sites with open exposure, but the slope and aspect vary. Habitat of the Colorado tansy-aster can be affected by unregulated recreation, mining, road construction, ATV and snowmobile use, and invasive species (Beatty et al. 2004).

Botanical surveys were conducted in the project area in September of 2018 and covered 100 percent of the snowmaking line installation corridor and the Elk Camp Meadows sites. Surveys targeted the two sensitive plant species described above as well as moonwort typical habitat associates, which are far more obvious to the eye. Generally, when four or five habitat associates are found growing together, the likelihood of finding moonworts increases dramatically. The 2018 survey did not detect the presence of any sensitive plant species or moonwort habitat associates. However, a small group of five moonworts

(*B. minganense* and *B. hesperium* not *B. ascendens*) was found in a prior 2011 survey adjacent to a portion of the proposed snowmaking alignment (Colfer 2011).

3.3.2 Environmental Consequences of the Proposed Action

As there were no individuals or populations of Colorado tansy-aster observed in the project area, the project would have ***no impact*** either directly or indirectly on this species.

Because moonworts have been found in close proximity to the proposed snowmaking alignment, and due to the difficulty of finding moonworts and the possibility of above-ground structures not emerging each year, there may be moonworts that exist and remain undetected within the proposed snowmaking alignment. Grading activities associated with installation of the snowmaking pipeline have the potential to negatively impact individual moonworts. Since these plants are small and delicate, any soil or ground disturbance that directly affects growing plants is likely to cause damage, at least to the above-ground structures. However, because moonwort species appear to be at least tolerant of disturbance, activities that cause light ground disturbance are not likely to significantly impact populations. Moderate to intense

ground disturbing activities occurring within occupied locations could negatively affect individuals and their habitat. Because moonworts are known to exist in close proximity to the proposed snowmaking alignment, and due to the difficulty of locating these small, inconspicuous plants and their propensity for remaining undetectable below ground in some years, it is possible that individuals exist within the proposed snowmaking alignment. Therefore, the Proposed Action *may adversely impact individuals but is not likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing.*

Noxious weed invasions may also occur where habitats are disturbed. If a noxious weed invasion occurs within occupied habitat, individuals or whole populations of moonwort species could be lost as a result of the change in plant community and resulting competition. Noxious weed management would be included in the Construction Management Plan and would include equipment cleaning, pretreatment, and post-construction monitoring and treatment (Table 2). These PDC would eliminate the transport of weed/invasive species seeds from offsite.

3.3.3 Cumulative Effects

The Proposed Action, when combined with other past, present, and reasonably foreseeable future actions at Snowmass, could alter moonwort occurrences and habitats. Examples of these actions include past project development, ski trail clearing, motorized and non-motorized recreational use, road and trail building and maintenance, insect and disease outbreaks, fire suppression, road construction, urban

development, noxious weed infestation, and ditch construction. All of these actions could have a negative impact on this species; however, actions that clear the forest canopy while minimizing ground disturbance or soil sterilization and avoid the introduction of noxious weeds may be beneficial to moonworts by creating potential habitat. There would be no cumulative effects to Colorado tansy-aster as no individuals or populations were observed in the Project Area.

3.4 WETLANDS AND WATERS OF THE U.S.

3.4.1 Affected Environment

A wetland delineation was completed for the areas of proposed disturbance in September 2018 and the results of this, including detailed maps, field data forms, and a plant species list, is contained within the Wetland Technical Report (Western Bionomics 2018c). There are no wetlands present in the vicinity of the proposed Elk Camp facilities. Two palustrine scrub/shrub (PSS) wetlands are located immediately adjacent to the proposed snowmaking line alignment: a wetland fringe associated with an intermittent stream channel near the top terminal of the Alpine Springs lift and a wetland seep on Adam's Avenue (Figure 2). Both wetlands were mapped at approximately 0.4 acre in size for a total of 0.8 acre of mapped wetlands within the project area (Table 3).

The intermittent stream channel near the top terminal of the Alpine Spring lift has been armored in several areas. The intermittent stream is discussed in greater detail in Section 3.5.



(LEFT) ARMORED STREAM CHANNEL NEAR ALPINE SPRING LIFT
(RIGHT) ARMORED STREAM CHANNEL WITH PSS WETLAND UPSTREAM

Table 3. Summary of Wetlands Present within the Survey Area

LOCATION	WETLAND/COWARDIN CLASS	WETLAND SIZE (ACRES)
Alpine Springs Lift Top Terminal	PSS	0.4
Adams' Avenue	PSS	0.4

Source: Cowardin et al. (1979); Western Bionomics 2018c

Notes: PSS = palustrine scrub/shrub

Soil samples of the two wetland areas demonstrate hydric characteristics, such as removal or transformation of the iron in the soils and a weak hydrogen sulfide odor, indicating an existing anaerobic state of the soils. The vegetation of the wetlands is primarily hydrophytic and dominated by Drummond willow, plane-leaf willow, Canada reedgrass, water sedge, Nebraska sedge, and tufted hairgrass. The hydrology of the wetlands demonstrates saturation of the root zone, inundation of the sample site, and presence of one primary or two or more secondary hydrological indicators.

3.4.2 Environmental Consequences of the Proposed Action

Overall, the Proposed Action is anticipated to comply with WCPH management measures. As required by the [Clean Water Act](#) (CWA) and [Executive Order 11990, Protection of](#)

[Wetlands](#), avoidance and minimization measures were considered throughout the planning process. Through implementation of PDC included in **Table 2**, direct and indirect adverse effects would be minimized. Thus, the Proposed Action, along with the implementation requirements, will comply with the CWA and Executive Order 11990.

The proposed snowmaking line would avoid the wetlands; however, the snowmaking line would cross the intermittent stream located near the top terminal of the Alpine Springs lift and would require a non-reporting United States Army Corps of Engineers Nationwide Permit (USACE NWP) 12. Other than hydraulic conveyance, the stream bed provides zero ecological functioning. At the spot of the crossing, the pipeline disturbance corridor would be minimized. The armoring that exists within the channel would be

restored following placement of the snowmaking pipeline to protect channel geometry. The potential also exists for the snowmaking line to create a “French drain” effect that would dewater this stream and starve the downstream wetland areas of water. **Table 2** identifies PDC to avoid this, primarily clay-cutoff walls or similar technology that would be installed in the pipeline channel. There are also requirements to minimize the pipeline disturbance corridor at the crossing and restore of the stream channel armoring. With adherence to these PDC and the conditions of the USACE NWP 12, the proposed crossing of the armored streambed would have no direct adverse impacts on the wetlands.

Potential indirect impacts of the project on wetlands and other waters of the U.S. include temporary downstream wetland dewatering from snowmaking pipeline construction, post-construction noxious weed invasion, and downstream sediment contributions. However, these indirect impacts would be limited in scope and duration and minimized by PDC. With the execution of the PDCs outlined in **Table 2**, there would be no long-term or permanent indirect impacts.

3.4.3 Cumulative Effects

When combined with all past, present, and reasonably foreseeable future actions, and considering the existing laws and guidance protecting wetlands as well as the PDC including wetland avoidance, the cumulative impacts to wetlands would be negligible.

3.5 WATERSHED AND SOILS

Additional details of the watershed analysis as well as more information on applicable laws, regulations and policy are described in the *Snowmass Snowmaking and Elk Camp Meadows EA Hydrology Report* (Hydrology

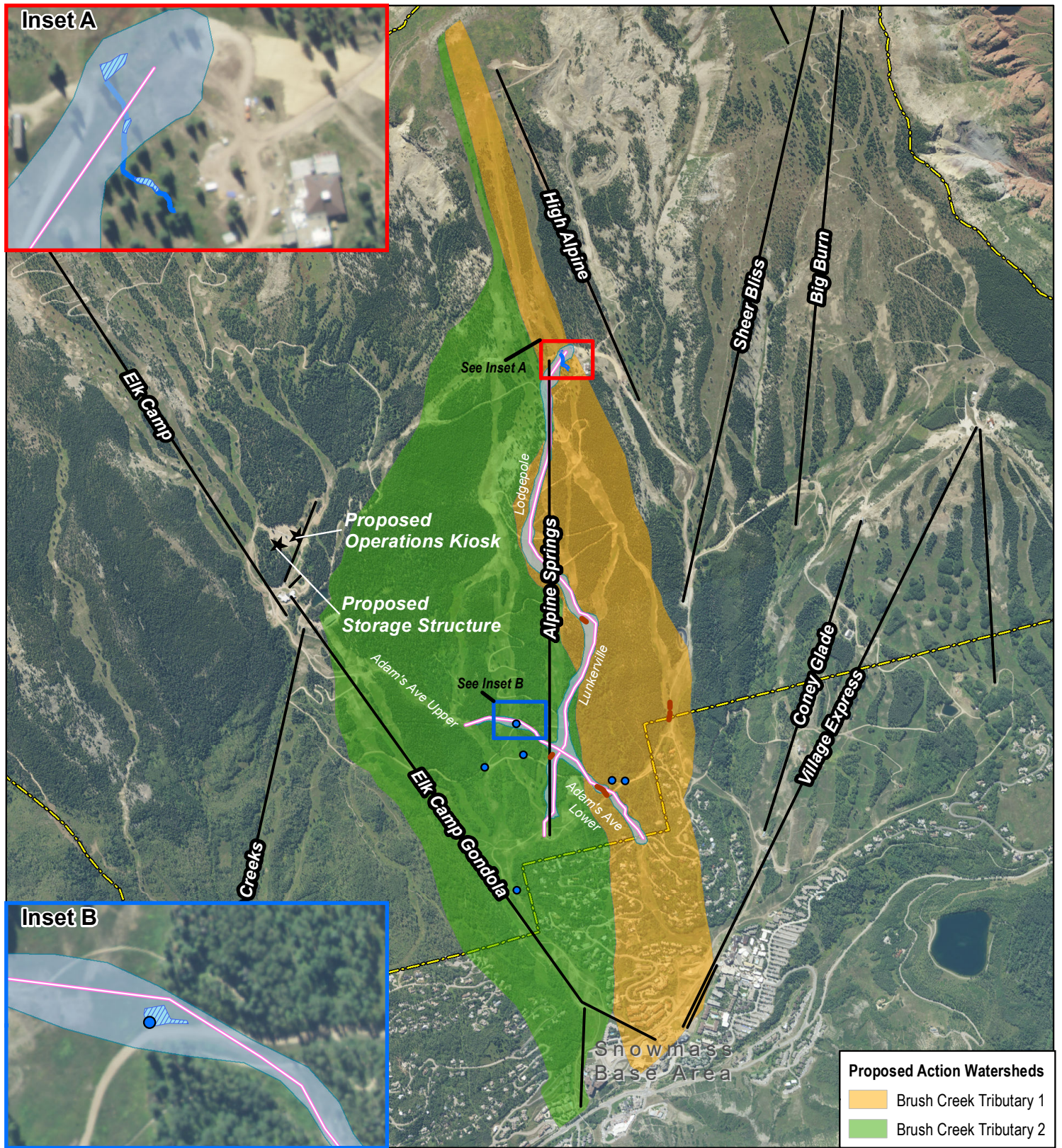
Report) contained in the project file (Resource Engineering 2018). The scope of the analysis for the proposed Elk Camp Meadows and Summit Snowmaking projects focuses on watershed and soil resources located on NFS lands at Snowmass. The Elk Camp Meadows facilities would be constructed in previous cleared areas and would require minimal grading; therefore, the potential effects on watershed and soil resources associated with construction of these facilities would be negligible and are not carried forward in detail in this analysis. The proposed snowmaking component of the project is analyzed below.

3.5.1 Affected Environment

Watershed

The proposed snowmaking would be located on areas drained by two unnamed tributaries to Brush Creek, a tributary to the Roaring Fork River. Brush Creek Tributary 1 is a first-order watershed that extends for 393 acres and is the smallest study watershed (**Figure 2**). A small perennial stream channel was identified at the lower elevations of this watershed, below approximately 9,200 feet. In addition, an intermittent/ephemeral channel was observed near the Gwyn’s High Alpine Restaurant, around 10,500 feet of elevation. This small stream collects surface drainage from the Showcase and lower section of *Reidar’s* ski trails; it then flows into a forested area just down-slope from Gwyn’s and dissipates/infiltrates into the ground.

Brush Creek Tributary 2 is also a first-order watershed and is 649 acres in size (**Figure 2**). A small perennial/intermittent channel exists at the lower elevations of the watershed, approximately below 9,200 feet of elevation. Similar to Tributary 1, above this elevation the stream is an ephemeral channel.



Snowmass Snowmaking and Elk Camp Meadows Projects Environmental Assessment

Figure 2
Wetlands and Watersheds

Legend

- Existing**
- Lifts
 - Wetlands
 - Streams
 - SUP Boundary

- Proposed**
- Snowmaking Lines
 - Snowmaking Coverage
 - Elk Camp Facility

Project Design Criteria

- BMPs
- Trail Repair



Water Yield

Yield of the study watersheds was estimated following the methodologies presented in the WRENSS Procedural Handbook and supplemented by the Colorado Ski Country USA Handbook (USEPA 1980; Colorado Ski Country USA 1986). The baseline and existing modeled water yields and peak flows present within the two study watersheds are summarized in **Table 4**.

Vegetation removal associated with construction of roads and housing developments has occurred at the lower

elevations of the study watersheds. Ski area development, including ski trail construction and application of snowmaking, has also occurred in the Brush Creek Tributaries 1 and 2. In general, vegetation clearing can influence spring snowmelt to have higher intensity peak flows that occur earlier in the runoff season as compared to pre-development, or baseline conditions. This is a direct consequence of the higher volume and rate of snowmelt due to decreased canopy interception and evapotranspiration, increased solar radiation in cleared areas, and also due to the snowmaking water input.

Table 4. Water Yield and Peak Flow for Baseline and Existing Conditions

WATERSHED	BASELINE		EXISTING	
	WATER YIELD (ACRE-FEET)	6-DAY AVERAGE PEAK FLOW (CFS)	WATER YIELD (ACRE-FEET)	6-DAY AVERAGE PEAK FLOW (CFS)
Brush Creek Tributary 1	112	1.1	283	5.4
Brush Creek Tributary 2	336	2.9	740	8.3

Instream Flows

Instream flows are important for maintaining overall stream health as well as healthy creek biota. They are non-consumptive, in-channel water rights owned by the Colorado Water Conservation Board (CWCB) and administered within the State of Colorado water right priority system with the purpose of preserving or improving the natural environment to a reasonable degree. Water used for snowmaking at Snowmass is diverted from Snowmass Creek. Instream flows for Snowmass Creek were decreed in Water Court Case No. W-2943 and apply to various reaches of the creek, from the outlet of Snowmass Lake to its confluence with the Roaring Fork River. The instream flow reach from where snowmaking water is diverted

spans from the confluence of Snowmass Creek with West Snowmass Creek down to its confluence with Capitol Creek. Minimum instream flows for Snowmass Creek over the snowmaking period (typically November and December) are determined by the average streamflow in this section of Snowmass Creek from October 11 to October 15.

Snowmass obtains its snowmaking water supply from the 215-acre foot Ziegler Reservoir, owned and operated by the Snowmass Watershed and Sanitation District (SWSD). Ziegler Reservoir is an integral part of the SWSD's water supply system which includes numerous water rights. Among these, the Snowmass Creek Pipeline is decreed for an amount of 6 cubic feet per second (cfs) for snowmaking uses. Prior to

the 2011 improvements to the Ziegler Reservoir, snowmaking water was drawn directly from Snowmass Creek at varying rates, up to 6 cfs as needed by snowmaking operations and as allowed by Snowmass Creek instream flows. While Ziegler Reservoir still requires replenishment from Snowmass Creek during the snowmaking season, most of the snowmaking water is now drawn from Snowmass Creek into storage during periods of maximum streamflow availability, therefore reducing demand upon the stream system during low-flow time periods. Because water needed for existing snowmaking operations is drawn from Ziegler Reservoir and/or from one or more of the on-mountain storage ponds (and not directly from the Snowmass Creek), impacts to the CWCB decreed instream flow water right on Snowmass Creek from existing snowmaking are avoided.

Based on snowmaking records provided by ASC and the existing acreage of trails with snowmaking, Snowmass uses on average 46 acre-feet of water per season for construction and maintenance of their terrain park features, such as jumps and half-pipe, and 197 acre-feet to make man-made snow on approximately 260 acres of ski trails. Existing snowmaking water use at Snowmass, therefore, averages approximately 0.76 acre-feet of water per acre of treated ski trail. Approximately 74 percent of this water returns to the Snowmass Creek watershed through runoff; the remaining 26 percent is lost to the watershed system due to evaporation, sublimation, and evapotranspiration.

Water Quality and Stream Health

Water quality within the project area is identified by Section 303(d) of the CWA. This section requires that States prepare a list of water quality-limited, or impaired, stream segments. In compliance with requirements

of the CWA, Section 305(b), the State of Colorado issued its most recent Integrated Water Quality Monitoring and Assessment Report in 2018 (CDPHE 2018). The report classified the three relevant segments of water to the project (including the mainstem of the Brush Creek, the East Snowmass Creek, and the Snowmass Creek) under Category 1: attaining water quality standards for all classified uses.

Stream health is the overall health of the stream channel including bank stability. While above 9,200 feet of elevation only ephemeral streams were found, below this elevation intermittent and perennial streams were observed in the study watersheds. These streams originate below springs and run through forested areas and via culverts across ski area mountain roads. Upgradient from the mountain access roads the channels appear to have stable banks and be generally good condition. Below the mountain road however, sediment deposits were observed. A field investigation completed during the summer of 2016 for the study watersheds provides information regarding the existing condition of the watershed (Resource Engineering 2016c). An area that has high runoff, like roads and other disturbed sites, and that has a continuous surface flow path into a stream or lake is defined as a Connected Disturbed Area (CDA). CDAs include roads, ditches, compacted soils, bare soils, and areas of high burn severity that are directly connected to the channel system. Generally, mountain roads in Snowmass were found to be in good condition; however, there exist sections of roads that are steep and/or located in close proximity to stream channels. Ruts, rill erosion, and evidence of road drainage flowing directly into the creek were observed in certain areas and thus were classified as CDAs. In summary, approximately 0.29 acre of CDA were observed within Brush Creek

Tributary 1 and 0.26 acre within Brush Creek Tributary 2. These CDAs are associated with connected roads that are currently in use. Results from this investigation that are relevant to the CDA analysis are included in the Hydrology Report.

Soils

Ten soil units were identified in the study watersheds (refer to **Table 5**). These soils can

be grouped into Anvik, Wetopa, Doughspon, Echemoor, Leadville, Scout, Callings, Seitz, Handran, and Eyre families in various associations. Of these, the proposed snowmaking coverage would occur on Leadville and Seitz families, and on Scout-Leadville and Wetopa-Doughspon-Echemoor complexes. These soils can be described as well drained, with low landslide and debris flow potential, and low to moderate-high erosion hazard (USDA Forest Service 1995).

Table 5. Soil Characteristics of the Project Area

SOIL MAP UNIT	SOIL MAP UNIT DESCRIPTION	LANDSLIDE POTENTIAL	DEBRIS FLOW POTENTIAL	EROSION POTENTIAL
338B	Wetopa - Doughspon - Echemoor families complex, 5 to 40% slopes	Low	Low	Moderate-High
360C	Leadville family, sandstone substratum, 40 to 65% slopes	Low	Low	Moderate
367B	Scout - Leadville families complex, 5 to 40% slopes	Low	Low	Low-Moderate
380B	Seitz family, 5 to 40% slopes	Low	Low	Low

A GIS-based bare ground analysis was conducted for the Snowmass SUP area in 2014 using high resolution ortho-imagery to identify areas where bare ground has resulted from unintentional soil loss. The assessment revealed approximately 230 acres of unnecessarily bare ground within the ski area overall. Since then, ASC has completed rehabilitation on at least 8 acres that were identified as priorities for rehabilitation as part of an ongoing process to improve soil conditions. An additional 13 to 14 acres of bare ground areas are to be rehabilitated per the requirements of the Snowmass Multi-Season Recreation Projects Record of Decision (USDA Forest Service 2017).

Areas of soil erosion were observed within the study watersheds during the 2018 field review on four areas exhibiting bare ground characteristics. These erosion areas are located on the *Lunkerville*, *Lodgepole*, *Green Cabin*, and *Adam's Avenue* ski trails.



EROSION AREAS

LEFT TO RIGHT: LUNKERVILLE SKI TRAIL; ADAM'S AVENUE SKI TRAIL; GREEN CABIN SKI TRAIL

3.5.2 Environmental Consequences of the Proposed Action

Watershed

Water Yield

Estimations show that water yields and peak runoff flow rates originating from the study watersheds would increase by approximately

1 to 4 percent relative to existing conditions due to the proposed additional snowmaking coverage. **Table 6** and **Table 7** summarize the increases in peak runoff flow rates and annual yield, respectively, modeled for the Proposed Action under average climatic conditions.

Table 6. Estimated Changes to Peak Flow

WATERSHED	6-DAY AVERAGE PEAK FLOW (CFS)			CHANGE RELATIVE TO EXISTING RATE (%)
	BASELINE	EXISTING	PROPOSED	
Brush Creek Tributary #1	1.1	5.4	5.4	0%
Brush Creek Tributary #2	2.9	8.3	8.4	1%

Table 7. Estimated Changes to Annual Yield

WATERSHED	WATER YIELD (ACRE-FEET)			CHANGE RELATIVE TO EXISTING YIELD (%)
	BASELINE	EXISTING	PROPOSED	
Brush Creek Tributary #1	112	283	294	4%
Brush Creek Tributary #2	336	740	748	1%

Instream Flows

Snowmass is proposing to expand its snowmaking infrastructure to cover approximately 34 acres of terrain that does not currently receive man-made snow. This expansion would require, on average, 25.8 acre-feet annually of additional water diversions. Snowmaking diversions from Snowmass Creek into Ziegler Reservoir would continue to be subject to instream flow requirements as decreed in Case No. W-2943, and Snowmass would continue to utilize water diverted in-priority into Ziegler Reservoir and in its three on-mountain storage ponds. The Proposed Action does not include a proposal to increase the snowmaking system pumping capacity. Instead of increasing the pumping rate, making artificial snow on the proposed 34 acres of new coverage would require an additional 72 hours of snowmaking operations (distributed over the length of the snowmaking season). In other words, the 25.8 acre-feet of water needed for the proposed snowmaking would involve extending the current length of pumping time by 72 hours per season. Because the average available hours within a winter season to make snow is adequate to contain these additional proposed snowmaking hours, the additional coverage would not result in an increase of the instantaneous demand of snowmaking water. Therefore, impacts to the Snowmass Creek instream flows are not anticipated to occur under the Proposed Action.

In addition, streamflow monitoring occurs downstream of the Snowmass' snowmaking diversion into the Ziegler Reservoir. If streamflows fall below instream flow requirements, the CWCB can curtail upstream junior water rights, including snowmaking diversions into the Ziegler Reservoir. Given this, it is possible that in

drought years, water would not be available for full snowmaking operations.

Water Quality and Stream Health

The increase in snowmaking runoff would drain towards mountain roads crossed by the study watershed streams and could result in higher sediment loading into the two tributaries. This could extend the acreage of CDAs especially on the road that crosses the Adam's Avenue ski trail. Improvements to the road drainage infrastructure would be needed to maintain, and would likely improve, the study watersheds' condition. Opportunities exist to disconnect nearly all of the current CDAs in the study watersheds by installing and maintaining BMPs for sediment control in the road-side ditches before they discharge in the stream channels. The proposed improvements to drainage conditions are described in more detail in the following section, and no negative impacts to the water quality of the study watersheds or its receiving waters would result from implementation of the Proposed Action.

Construction of the proposed snowmaking infrastructure would result in a temporary impact to a small intermittent stream, located at the upper elevations of the Tributary 1 watershed. This intermittent stream is described in more detail in **Section 3.4**. The impact would involve approximately 50 linear feet of stream channel and 0.2 acre of its Water Influence Zone (WIZ). The temporary impact would result from excavation of a trench across the channel to install the snowmaking pipeline. Following construction, the stream channel would be restored.

Construction and implementation of the Proposed Action following the PDCs outlined in **Table 2** will maintain or improve the overall condition of the study watersheds; therefore, the project would be consistent with the WCPH and Forest Plan standards

and will not adversely impact the condition of study watersheds.

Soils

The proposed snowmaking would be implemented on soils with a low landslide and debris flow potential, and with low to moderate-high erosion potential (refer to **Table 5**). Approximately 2,600 feet of the proposed snowmaking for the Adam's Avenue trail would occur on soils that have a moderate-high erosion potential. The rest of the proposed snowmaking infrastructure would be constructed on soils with a low to moderate erosion potential. The temporary disturbance required to install the snowmaking pipelines and hydrants totals approximately 10.3 acres. This acreage would be restored to original contours (i.e., no additional grading) and revegetated per standard WRNF procedures.

As described in **Section 3.5.1**, areas of soil erosion were observed on the *Lunkerville*, *Lodgepole*, *Green Cabin*, and *Adam's Avenue* ski trails. Except for the erosion on *Green Cabin*, these areas of erosion are located on ski trails where snowmaking is proposed. The erosion on the *Green Cabin*, *Adam's Avenue*, and *Lunkerville* trails occurred on soils classified as having high erosion potential (map unit 338B, refer to **Table 5**). Although soils in the area of the eroded *Lodgepole* trail were mapped as having a low potential for erosion, the change in slope and corresponding acceleration of surface runoff flows have caused the ski trail surface to erode. In order to maintain or improve conditions in these areas, the snowmaking proposed for this trail would have to be implemented following rehabilitation of the eroded soils and construction of ski trail waterbars, adequately spaced, to intercept snowmelt and direct it to the forested areas on the edges of the ski trails. The acreage of the areas where eroded soils would require

rehabilitation totals less than 0.1 acre (refer to **Figure 2**). By following soil management requirements and the PDC listed in **Table 2**, no permanent loss of soil organic material is anticipated to occur from implementation of the Proposed Action.

3.5.3 Cumulative Effects

Because there are no impacts to water quality anticipated from any of the project components in the Proposed Action, there would be no cumulative impacts to water quality.

The proposed snowmaking coverage and associated increases in watershed yield and peak streamflows discussed would not have a measurable effect at the cumulative effects scale. Similarly, the 25.8 acre-feet of new snowmaking diversions would have a negligible impact on the Brush Creek-Roaring Fork River watershed, even when considered in the context of other snowmaking withdrawals within the Roaring Fork Valley. The additional 25.8 acre-feet of water diversions would occur when water rights are in-priority, and in compliance with the CWCB instream flow water rights.

Despite direct project effects of the Proposed Action, when considered cumulatively in addition to past, present, and reasonably foreseeable future actions, implementation of the Proposed Action would maintain stream health and watershed condition through successful implementation of PDC described in **Table 2**. By maintaining the health of the study watersheds, the Proposed Action would not exhibit a negative influence upon watershed conditions in a cumulative context.

Chapter 4.

Consultation and Coordination

4.1 PREPARERS

Table 8 and **Table 9** detail those who participated in initial scoping, were members of the ID Team, Consultant Team and/or provided direction and assistance during the preparation of this EA..

Table 8. Forest Service Interdisciplinary Team

TEAM MEMBER	PROJECT RESPONSIBILITY
Scott Fitzwilliams	Forest Supervisor, Deciding Officer
Rachel Franchina	Mountain Resorts Team Lead/ID Team Leader
Kevin Warner	Aspen-Sopris Acting District Ranger
Roger Poirier	Aspen-Sopris Acting Deputy District Ranger
Monte Lutterman	WRNF Aspen-Sopris Local Liaison, Recreation
Tom Fuller	Archaeologist, Heritage
Isaac Sims	Landscape Architect, Visuals
Lance Koch	Biologist, Wildlife/Aquatics/Botany
Justin Anderson	Hydrologist, Watershed/Soils

Table 9. Consultant Team

TEAM MEMBER	ORGANIZATION	PROJECT RESPONSIBILITY
Ashley Smith	SE Group	Project Manager
Sam O'Keefe	SE Group	Environmental Analyst/GIS
Tyler Ford	SE Group	Environmental Analyst
Paula Samuelson	SE Group	Document Production
Kelly Colfer	Western Bionomics	Wildlife Biologist, Botanist, Wetland Ecologist
Raul Passerini, PE	Resource Engineering, Inc.	Hydrologist
Melissa Elkins	Metcalf Archeology	Archaeologist

4.2 PUBLIC INVOLVEMENT

In August of 2018, a [Notice of Proposed Action](#) (NOPA) was mailed to 57 community residents, interested individuals, public agencies, tribal governments, and other organizations, initiating a 30-day comment period. Ten comment letters were received during scoping that were then used by the ID Team to identify substantive issues and to

consider potential alternatives to the Proposed Action. A total of thirty substantive comments were extracted. The *Response to Comments* document in the project file details these substantive comments and the agency responses to them. **Table 10** and **Table 11** list the agencies that were contacted during the scoping process and the individuals and organizations who commented, respectively.

Table 10. Agencies Contacted

GOVERNMENT	AGENCIES CONTACTED
Federal	<ul style="list-style-type: none"> • U.S. Environmental Protection Agency • U.S. Fish and Wildlife Service • U.S. Army Corps of Engineers • Bureau of Land Management
Tribal	<ul style="list-style-type: none"> • Southern Ute Indian Tribe • Ute Indian Tribe • Ute Mountain Ute Tribe • Ute Indian Tribe, Uintah & Ouray Tribal Business Committee
State	<ul style="list-style-type: none"> • Colorado Department of Transportation • State Historic Preservation Office • Colorado Parks and Wildlife • Governor of Colorado • Colorado Department of Public Health and Environment
Local	<ul style="list-style-type: none"> • Pitkin County Board of County Commissioners • Pitkin County Community Development Department • Pitkin County Trails and Open Space

Table 11. Individuals and Organizations Who Commented during Scoping

NAME	ORGANIZATION (IF APPLICABLE)
Chelsea Brundige	Snowmass Capitol Creek Caucus
David Chase	Snowmass Capitol Creek Caucus
Brian Leach	Upper Snowmass Creek Caucus
Arthur Martin	Upper Snowmass Creek Caucus
Sue Helm	n/a
Cristie Lindenfelser	n/a

Chapter 5.

References

Table 12. In-text Citations and Full Reference

IN-TEXT CITATION	FULL REFERENCE
ASC 2008	Aspen Ski Company. 2008. ASC Energy Plan. Available at: https://www.aspensnowmass.com/we-are-different/sustainability-reports
ASC 2015	Aspen Skiing Company. 2015. 2015 Snowmass Mountain Master Development Plan. Accepted August 4, 2015.
ASC 2018	Aspen Skiing Company (ASC). 2018. ASC's Statement regarding Renewable Energy options for the Gent's Ridge PH.
Beatty et al. 2003	Beatty, B.L., W.F. Jennings, and R.C. Rawlinson (2003). <i>Botrychium ascendens</i> W.H. Wagner (trianglelobe moonwort), <i>B. crenulatum</i> W.H. Wagner (scalloped moonwort), and <i>B. lineare</i> W.H. Wagner (narrowleaf grapefern): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available at: http://www.fs.fed.us/r2/projects/scp/assessments/botrychiums.pdf .
Beatty et al. 2004	Beatty, B.L., W.F. Jennings, and R.C. Rawlinson (2004). <i>Machaeranthera coloradoensis</i> (Gray) Osterhout (Colorado tansyaster): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available at: http://www.fs.fed.us/r2/projects/scp/assessments/machaerantheracoloradoensis.pdf
CDPHE 2018	State of Colorado, Department of Public Health and Environment. 2018. 2018 Integrated Water Quality Monitoring and Assessment Report. Available at https://www.colorado.gov/pacific/cdphe/wqcc-reports-and-plans
Colfer 2011	Colfer, K. (2011). Snowmass Ski Area Mountain Bike Trails Biological Evaluation and Management Indicator Species Assessment. On file at the Aspen/Sopris Ranger District Office, Carbondale, CO.
Colorado Ski Country USA 1986	A Final Report on the Colorado Ski Country USA Water Management Research Project. Prepared by Wright Water Engineers, Inc. and Charles F. Leaf. Denver, CO: Colorado Ski Country USA, February 1986.
Cowardin et al. 1979	Cowardin, L.M., V. Carter, F.C. Golet, and E.T. La Roe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service Pub. FWS/OBS-79/31, Washington, D.C., 103 p.
CPW 2013	Colorado Parks and Wildlife (CPW). 2013. Avalanche Creek Elk Herd E-15 Data Analysis Unit Plan. Colorado Parks and Wildlife, Glenwood Springs, CO.
CPW 2018	Colorado Parks and Wildlife (CPW). 2018. Elk 2017 Post-Hunt Population and Sex Ratio Estimates. Colorado Parks and Wildlife, Glenwood Springs, CO.
Hatfield et al. 2012	Hatfield, R., S. Jepsen, E. Mader, S. H. Black, and M. Shepherd. 2012. Conserving Bumble Bees. The Xerces Society for Invertebrate Conservation. Available: http://www.xerces.org/bumblebees/guidelines
Kolb and Spribille 2001	Kolb, A. and T. Spribille. 2001. Population and Habitat Characteristics of Rare Moonworts (<i>Botrychium</i> subgenus <i>Botrychium</i>) in Summit County, Colorado. Final Report submitted to the Dillon Ranger District, White River National Forest, Summit County, CO.

Table 12. In-text Citations and Full Reference (cont.)

IN-TEXT CITATION	FULL REFERENCE
Metcalf 2018	Metcalf Archeological Consultants, Inc. Limited-Results Cultural Resource Survey Form. October 18, 2018.
Resource Engineering 2016a	Resource Engineering, Inc. 2016. Restaurant Water Depletions-Section 7. Unpublished Report. On file at the Aspen-Sopris Ranger District.
Resource Engineering 2016b	Resource Engineering, Inc. 2016. Snowmaking Ponds Evap-Section 7. Unpublished Report. On file at the Aspen-Sopris Ranger District.
Resource Engineering 2016c	Hydrology Report for the Snowmass Multi-Season Recreation Projects Final Environmental Impact Statement. November 2016.
Resource Engineering 2018	Resource Engineering, Inc. 2018. Snowmass Snowmaking and Elk Camp Meadows EA Hydrology Report. On file at the Aspen/Sopris Ranger District Office, Carbondale, CO.
Torreta 2013	Torreta, R. 2013. Western Bumble Bee – USDA-Forest Service R2 Sensitive Species Evaluation Form. Available at: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3843049.pdf
USDA Forest Service 1995	USDA Forest Service. 2002a. White River National Forest. Draft July 1995. Aspen, Dillon, Eagle, Holy Cross, Rifle, and Sopris Ranger Districts. Soil and Ecological Land Unit Survey. Holy Cross Area, Colorado.
USDA Forest Service 2006	USDA Forest Service. 2006. Forest Service Handbook 2509.25 – Watershed Conservation Practices Handbook. Chapter 10 – Management Measures and Design Criteria. Effective Date: May 5, 2006.
USDA Forest Service 2010	USDA Forest Service. 2010. Forest Service Handbook 1909.15 – National Environmental Policy Act Handbook. Chapter 40 – Environmental Assessments and Related Documents. Effective Date: September 30, 2010.
USDA Forest Service 2017	USDA Forest Service. 2017. Snowmass Multi-Season Recreation Projects Final Environmental Impact Statement Final Record of Decision. Available at https://www.fs.usda.gov/project/?project=49057 .
USEPA 1980	US Environmental Protection Agency. WRENS: An Approach to Water Resources Evaluation of Nonpoint Silvicultural Sources (A Procedural Handbook). EPA-600/8-80-012. Washington DC: U.S. Environmental Protection Agency.
USFWS 1993	US Fish and Wildlife Service. 1993. Section 7 consultation, sufficient progress, and historic projects agreement and Recovery Action Plan Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin. USDI FWS Region 6, Denver CO.
USFWS 1995	US Fish and Wildlife Service. 1995. Biological Opinion for the Master Development Plan for the Snowmass Ski Area.
USFWS 1999	US Fish and Wildlife Service. 1999. Final programmatic biological opinion for Bureau of Reclamation's operations and depletions, other depletions, and funding and recovery program actions in the upper Colorado River above the confluence with the Gunnison River. USFWS Grand Jct. CO.
USFWS 2018	US Fish and Wildlife Service. 2018. Email Personal Communication from J. Creed Clayton, Fish and Wildlife Biologist. November 14, 2018.

Table 12. In-text Citations and Full Reference (cont.)

IN-TEXT CITATION	FULL REFERENCE
Western Bionomics 2016	Western Bionomics, LLC. 2016. Snowmass Mountain Ski Area, Sheer Bliss Pond Construction – Biological Evaluation. On file at the Aspen-Sopris Ranger District, Carbondale, CO.
Western Bionomics 2018a	Western Bionomics, LLC. 2018a. Snowmass Ski Area Snowmaking and Elk Camp Meadows Projects Terrestrial and Aquatic Wildlife Biological Evaluation, Botany Biological Evaluation, Migratory Bird Evaluation, Species of Local Concern Evaluation. October 31, 2018.
Western Bionomics 2018b	Western Bionomics, LLC. 2018b. Snowmass Ski Area Snowmaking and elk Camp Meadows Projects Biological Assessment. October 22, 2018
Western Bionomics 2018c	Western Bionomics, LLC. 2018. Snowmass Ski Area Snowmaking and Elk Camp Meadows Projects. Wetland Technical Report. October 30, 2018.

Finding of No Significant Impact

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Analysis presented in the EA indicates that the Proposed Action would not, individually or cumulatively, significantly affect the quality of the human, biological, or physical environment; thus, an environmental impact statement would not be required. CEQ Regulations ([40 CFR § 1508.13](#)) establish the definition of significance with respect to evaluating the effects of the project. The provisions of [40 CFR § 1508.27](#) indicate that project significance must be judged in terms of both *context* and *intensity*, defined as follows:

CONTEXT

The significance of an action must be analyzed in several contexts and varies with the setting. In the case of site-specific actions, significance depends more on the effects in the locale rather than the world as a whole. Both short- and long-term effects are relevant. The direct and indirect effects analysis contained in the EA focuses on the Snowmass Ski Area project area, and extends further for cumulative effects analysis, depending on the resource.

INTENSITY

The finding of no significant impact is based on the intensity of effects using the ten factors identified in [40 CFR § 1508.27\(b\)](#). Intensity is a measure of the severity, extent, or quantity of effects, and is based on information from the effects analysis of the EA and the references in the project file. An initial screen was conducted to ensure that the Proposed Action is consistent with the [2002 WRNF Land and Resource Management Plan](#). Additionally, the ID Team considered the effects of the project appropriately and thoroughly with an analysis that is responsive to concerns and issues raised by the public. They considered the environmental effects using relevant scientific information and their

knowledge of site-specific conditions gained from field visits.

1) Consideration of both beneficial and adverse impacts.

Both the beneficial and adverse impacts associated with the Proposed Action are presented in the EA. The Proposed Action would provide recreational benefits to users of the WRNF and would improve recreation opportunities on NFS lands. Any adverse resource impacts are thoroughly documented in Chapter 3 of the EA and are determined to be avoidable and non-significant. Other issues and resources were not included in detailed analysis in the EA due to a lack of anticipated impacts. The finding of no significant environmental effects is not biased by beneficial effects of the action.

2) Consideration of the effects on public health and safety.

Although there are inherent risks associated with lift-served alpine skiing, the Proposed Action does not significantly affect public health or safety.

3) Consideration of the unique characteristics of the geographic area.

There are no unique characteristics of the geographic area affected by the Proposed Action.

4) Consideration of the degree to which the effects on the quality of the human environment are likely to be considered controversial.

The term “controversial” in this context refers to cases where substantial scientific dispute exists as to the size, nature, or effects of a major federal action on some human environmental factor rather than to public opposition of a proposed action or alternative.

No scientific dispute exists regarding the Proposed Action or the analysis contained in the EA. Based on the fact that the Forest Service has analyzed and approved numerous projects of this type, the effects of this project are not considered to be controversial, nor is there scientific dispute about these effects.

5) Consideration of the degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

The Proposed Action is similar to projects common at ski areas that operate on NFS lands. The analysis shows the effects are not uncertain, and do not involve unique or unknown risks. Therefore, based on the Forest Service's experience with implementing these types of activities, as well as the requirement to implement PDC to minimize effects, there would not be significant effects on the human environment.

6) Consideration of the degree to which this action may establish a precedent for future actions with significant effects or that it represents a decision in principle about future considerations.

This decision would not establish precedence for future actions with significant risks to the environment. The Proposed Action is consistent with forest-wide and Management Area 8.25 direction, as well as the Snowmass SUP. Furthermore, the approved projects and activities are common at a developed resort such as Snowmass.

7) Consideration of the action in relation to other actions with individually insignificant but cumulatively significant impacts.

The Cumulative Effects analyses presented for each resource throughout Chapter 3 in

the EA discloses past, present, and reasonably foreseeable future actions with potential to lead to effects which are cumulative in nature. Due to avoidance, project-specific PDC, and the implementation of Best Management Practices, the analysis does not identify any cumulatively significant impacts that are anticipated to result from implementation of the Proposed Action.

8) Consideration of the degree to which the action may affect listed or eligible historic places.

Cultural resources were initially to be included for detailed analysis due to the possibility that ground disturbance related to construction of the proposed infrastructure could impact archaeological sites. As indicated in the EA, the project area was surveyed, and no eligible sites were found within areas proposed for disturbance; therefore, no effects to eligible heritage and cultural resources are anticipated to occur as a result of implementation of the Proposed Action.

9) Consideration of the degree to which the action may adversely affect an endangered or threatened species or its critical habitat.

The Proposed Action is consistent with [Section 7\(d\) of the Endangered Species Act](#). The Proposed Action would affect the four Upper Colorado River fish (Colorado pikeminnow, razorback sucker, humpback chub, and bonytail chub). No lynx habitat would be impacted by the Proposed Action; therefore, no impacts to lynx would occur.

In 1995, the WRNF received a Biological Opinion from the USFWS relative to proposed depletions for snowmaking and on-mountain facilities that were included in Snowmass's previous MDP, and this Biological Opinion contained a

determination of *may affect, is likely to adversely affect* the four Upper Colorado River fish. The Biological Opinion concluded that the reasonable and prudent measures that were incorporated in the MDP at the time of consultation and subsequently incorporated into Snowmass's operations would offset jeopardy to the endangered Colorado River fish. There were 84.2 acre-feet of depletions authorized in 1995. To date, Snowmass has utilized 37.97 acre-feet of the depletions authorized in 1995. The Proposed Action would require 6.2 acre-feet of new depletions; however, the depletion falls under the approval of the 1995 Biological Opinion and the USFWS confirmed no new consultation or determination is required (USFWS 2018).

10) Consideration of whether the action violated federal, state, or local laws or requirements imposed for the protection of the environment.

Based on information disclosed in the EA, the Biological Assessment, the Biological Evaluation, and the project file, no federal, state, or local laws, regulations, or requirements for protection of the environment would be violated with implementation of the Proposed Action, including: USFWS's [Endangered Species Act Informal Section 7 Consultation](#); USACE's [Clean Water Act 404 Permit](#); State of Colorado's [Stormwater Management Plan](#) and [Burn Permit](#); [Executive Order 11990, Protection of Wetlands](#); and [Executive Order 11988, Floodplain Management](#).

List of Hyperlinks Provided in this FONSI

EMBEDDED LINK	URL
<u>2002 WRNF Land and Resource Management Plan</u>	https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_000999.pdf
<u>40 CFR § 1508.13</u>	https://www.gpo.gov/fdsys/pkg/CFR-2011-title40-vol33/pdf/CFR-2011-title40-vol33-sec1508-13.pdf
<u>40 CFR § 1508.27</u>	https://www.gpo.gov/fdsys/pkg/CFR-2012-title40-vol34/pdf/CFR-2012-title40-vol34-sec1508-27.pdf
<u>40 CFR § 1508.27(b)</u>	https://www.gpo.gov/fdsys/pkg/CFR-2017-title40-vol37/pdf/CFR-2017-title40-vol37-sec1508-27.pdf
<u>Burn Permit</u>	https://www.colorado.gov/pacific/cdphe/openburn
<u>Clean Water Act 404 Permit</u>	https://www.epa.gov/cwa-404/section-404-permit-program
<u>Endangered Species Act Informal Section 7 Consultation</u>	https://www.fws.gov/midwest/endangered/section7/section7.html
<u>Executive Order 11990, Protection of Wetlands</u>	https://www.archives.gov/federal-register/codification/executive-order/11990.html
<u>Executive Order 11988, Floodplain Management</u>	https://www.archives.gov/federal-register/codification/executive-order/11988.html
<u>Section 7(d) of the Endangered Species Act</u>	https://www.gpo.gov/fdsys/pkg/CPRT-109HPRT98115/pdf/CPRT-109HPRT98115.pdf
<u>Stormwater Management Plan</u>	https://www.colorado.gov/pacific/sites/default/files/STORMWATER%20MANAGEMENT%20PLAN%20PREPARATION%20GUIDANCE.pdf

Draft Decision Notice

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<u>2015 Snowmass Mountain Master Development Plan</u>	https://www.fs.usda.gov/detail/whiteriver/landmanagement/planning/?cid=STELP-RDB5333326
<u>36 CFR § 218.5(a)</u>	https://www.gpo.gov/fdsys/pkg/CFR-2017-title36-vol2/pdf/CFR-2017-title36-vol2-sec218-5.pdf
<u>36 CFR § 218.8</u>	https://www.gpo.gov/fdsys/pkg/CFR-2006-title36-vol2/pdf/CFR-2006-title36-vol2-sec218-8.pdf
<u>36 CFR § 218.8(d)</u>	https://www.gpo.gov/fdsys/pkg/CFR-2017-title36-vol2/pdf/CFR-2017-title36-vol2-sec218-8.pdf
<u>36 CFR § 218.9</u>	https://www.gpo.gov/fdsys/pkg/CFR-2017-title36-vol2/pdf/CFR-2017-title36-vol2-sec218-9.pdf
<u>36 CFR § 220.7(b)(2)(ii)</u>	https://www.gpo.gov/fdsys/pkg/CFR-2011-title36-vol2/pdf/CFR-2011-title36-vol2-sec220-7.pdf
<u>40 CFR § 1508.27</u>	https://www.gpo.gov/fdsys/pkg/CFR-2012-title40-vol34/pdf/CFR-2012-title40-vol34-sec1508-27.pdf
<u>Built Environment Image Guide</u>	https://www.fs.fed.us/recreation/programs/beig/
<u>Burn Permit</u>	https://www.colorado.gov/pacific/cdphe/openburn
<u>Clean Water Act 404 Permit</u>	https://www.epa.gov/cwa-404/section-404-permit-program
<u>Endangered Species Act Informal Section 7 Consultation</u>	https://www.fws.gov/midwest/endangered/section7/section7.html
<u>Executive Order 11990, Protection of Wetlands</u>	https://www.archives.gov/federal-register/codification/executive-order/11990.html
<u>Executive Order 11988, Floodplain Management</u>	https://www.archives.gov/federal-register/codification/executive-order/11988.html
<u>Forest Plan</u>	https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_000999.pdf
<u>Forest Service Handbook 1909.15, Chapter 40, Section 41.22</u>	https://www.fs.fed.us/cgi-bin/Directives/get_dirs/fsh?1909.15
<u>Notice of Proposed Action</u>	https://www.fs.usda.gov/nfs/11558/www/nepa/109878_FSPLT3_4405747.pdf
<u>National Forest Management Act of 1976</u>	https://www.fs.fed.us/emc/nfma/includes/NFMA1976.pdf
<u>Post Independent</u>	http://classifieds.postindependent.com/category/Legals
<u>Stormwater Management Plan</u>	https://www.colorado.gov/pacific/sites/default/files/STORMWATER%20MANAGEMENT%20PLAN%20PREPARATION%20GUIDANCE.pdf

INTRODUCTION/ BACKGROUND

This Decision Notice documents my decision and rationale for approving the proposed projects on the Aspen-Sopris Ranger District, White River National Forest (WRNF). The Project Area is located within the Snowmass Ski Area (Snowmass) Special Use Permit (SUP) boundary, Pitkin County, Colorado. My decision is based on and supported by the December 2018 Snowmass Snowmaking and Elk Camp Meadows Projects Environmental Assessment (EA).

Snowmass operates under a SUP administered by the WRNF's Aspen-Sopris Ranger District. The 2002 WRNF *Land and Resource Management Plan* ([Forest Plan](#)) provides general standards and guidelines for the operation of Snowmass regarding its activities and operations on National Forest System (NFS) lands. The SUP and associated summer and winter operating plans, as well as other resource management documents, provide more specific guidance for annual winter and summer ski area operations and projects.

PURPOSE AND NEED FOR ACTION

In its [2015 Snowmass Mountain Master Development Plan](#) (SMMDP), Aspen Skiing Company (ASC) identified a need for additional snowmaking coverage to address the winter recreation experience at Snowmass, as well as the need for storage and operational improvements. The Forest Service, through acceptance of ASC's 2015 SMMDP and internal scoping, has identified the need for:

- ◆ **Reliable and consistent snow coverage on Lodgepole, Lunkerville, and Adam's Avenue ski trails, especially during the**

early and late parts of the season and years of below average snowfall

- ◆ **Improved organization and visual appearance of operations and stored materials in the Elk Camp Meadows area**

The existing conditions driving these needs are further described in Section 1.2 of the EA.

DECISION AND REASONS FOR THE DECISION

After thoroughly considering the Purpose and Need for Action, issues, range of alternatives, and analyses presented in the EA, as well as public comments received, **I am approving the Proposed Action** with the inclusion of all Project Design Criteria (PDC) identified in Table 2 of the EA and included in **Appendix A** of this document. The Selected Alternative will include various snowmaking and operational improvements associated with providing snowmaking in the Alpine Springs area and storing materials in the Elk Camp Meadows area, as described below and depicted on the attached figure.

The Selected Alternative, along with my decision to require PDC, meets all applicable laws, regulations, and policies. PDC incorporation will ensure the project will not result in any unacceptable effects to NFS lands. Failure to comply with the required PDC will constitute a breach of the project approval and could suspend construction and/or operations on the facilities approved by this decision.

Selected Alternative Description

All the approved projects are within the existing Snowmass SUP area. Natural resource considerations (e.g., wetland avoidance and erosion mitigation) have been accounted for in the planning of this project, and the result is a low-impact design considering the acreage of snowmaking

implemented. With the exception of necessary maintenance, no organized summer use of the Alpine Springs and Elk Camp Meadows areas will occur beyond existing conditions.

Snowmaking on Lodgepole, Lunkerville, and Adam's Avenue

To address inconsistent snow conditions within the Alpine Springs area, snowmaking is approved on *Lodgepole*, *Lunkerville*, and *Adam's Avenue*. Approximately 1.5 miles of 8-inch-diameter steel water and air pipeline will be installed along the west side of *Lodgepole* and extending along lower *Lunkerville* to the bottom terminal of the Alpine Springs lift. Another approximately 0.7 mile of pipeline will be installed from the existing snowmaking line at the intersection of *Adam's Avenue* and *Slider* and continuing on *Adam's Avenue* to tie into the existing *Adam's Avenue* snowmaking line located at the SUP boundary. The total amount of snowmaking will include approximately 2.1 miles of pipeline and 33 acres of coverage.

Construction Practices

The snowmaking pipelines will be buried within a 5-foot-deep trench located approximately 40 feet from the trail edge. Approximately 70 hydrants and/or electric pedestals, spaced approximately 150 feet apart, will be placed along the trail edge and connected to the main snowmaking pipeline by 2-inch-diameter buried lateral piping. Approximately 0.8 mile of high voltage electrical wire will be installed within a 3-foot-deep trench parallel to the main snowmaking pipeline trench and connect to nearby Holy Cross Energy transformers, where available.

All ground disturbance will be contained within a 40-foot-wide construction corridor along the snowmaking pipeline alignment,

for a total disturbance of approximately 10 acres. No tree removal will be required, and all disturbed areas will be revegetated according to approved project vegetation and restoration plans.

A portion of the approved snowmaking pipeline near the top terminal of the Alpine Springs lift will cross an armored intermittent stream channel, but will avoid wetlands adjacent to the stream channel upstream and downstream of the crossing. The disturbance corridor width will be minimized in the area of the crossing; clay-cutoff walls (or similar technology) will be installed in the pipeline trench to prevent dewatering of adjacent wetlands; and streambed armoring will be replaced following construction.

Elk Camp Meadows Facilities

To provide storage and improve operations, two facilities will be constructed in the vicinity of Elk Camp Meadows. The first facility will be a storage structure that will be used to store materials used for Ullr Nights. This storage structure will be approximately 600 square feet and located on the eastern edge of the Magic Carpet tubing area below the intersection of *Bear Bottom* and *Gunner's View*. Ski area personnel will occasionally access the storage structure and the top of the existing magic carpet with trucks in the summer; winter access will be via snowmobile. The storage structure will be constructed with natural wood and/or corten-type siding with a metal roof and will conform to the Forest Service's [Built Environment Image Guide](#) (BEIG).

The second approved facility will be an operations kiosk located near the tubing hill base area. The operations kiosk will contain ticketing equipment, as well as provide storage for tubing equipment. Similar to the approved storage structure, the operations kiosk will be approximately 600 square feet in size, constructed with natural wood and/or

corten-type siding and a metal roof, and will conform to the BEIG.

Both the approved storage structure and operations kiosk will be constructed in previously cleared areas requiring minimal grading. No tree clearing will be required.

Project Design Criteria

General Design Criteria (GDC) and PDC have been applied to avoid and minimize potential resource impacts from construction and operation of the Selected Alternative. GDC are located on the project website. PDC are identified in Table 2 of the EA and **Appendix A** of this document. This list supplements the list of BMPs that ASC will be required to prepare for the Forest Service prior to the start of construction and implementation.

Rationale for My Decision

In reaching my decision I relied heavily upon an Interdisciplinary (ID) Team comprised of Forest Service resource specialists who analyzed the effects of the Proposed Action documented in the EA. I considered the following issues and concerns: anticipated effects to wildlife and aquatics, vegetation, wetlands, watershed, soils, and recreation. I recognize that certain resources were not carried forward in detailed analysis for the EA; however, those resources were considered by the ID Team and eliminated from detailed analysis with supporting rationale. I also reviewed the PDC included in the EA as well as public comments received during the 30-day scoping/comment period and considered how the Selected Alternative would respond to the stated Purpose and Need.

In reviewing the qualitative and quantitative effects on the human and biological environment presented in the EA, I find they have been adequately addressed and

disclosed. I considered impacts to the full range of resources affecting the human, biological, and physical environments. I have reviewed the potential direct, indirect, and cumulative impacts. Through the application of appropriate PDC identified to minimize impacts to the resources of concern, I am confident that potential impacts have been thoroughly assessed and disclosed.

The planning and design of the approved project reduces environmental impacts, allowing for a more straightforward analysis that does not include significant impacts. I recognize that the project has the potential to increase erosion and runoff and therefore impact both the local Brush Creek drainage network and the broader Roaring Fork watershed. I understand that there will be an additional 25.8 acre-feet of diversions from Snowmass Creek into Ziegler Reservoir to support the approved snowmaking. I recognize that members of the public expressed concern over this; however, as this additional diversion will not require an increase in the snowmaking system pumping capacity/rate and will instead require approximately 72 additional hours of snowmaking operations, the impacts are expected to be negligible. I also recognize that the public will benefit from the improved skiing conditions and guest experience. Overall, I believe my decision will improve the experience of guests to the Forest within the Snowmass SUP area in conjunction with the stated environmental impacts.

OTHER ALTERNATIVES CONSIDERED

The Proposed Action was the only alternative analyzed in detail in the EA. In accordance with [Forest Service Handbook 1909.15, Chapter 40, Section 41.22](#), and [36 CFR § 220.7\(b\)\(2\)\(ii\)](#), the EA did not include an analysis of the No Action Alternative;

however, numerous other alternatives were considered early in the NEPA process. These alternatives were thoroughly considered by the Forest Service for consistency with Forest Plan direction and were not carried forward into detailed analysis (refer to the *Issues, Resources, and Alternatives Considered but Not Carried Forward* document, located in the project file).

PUBLIC INVOLVEMENT

In August of 2018, a [Notice of Proposed Action](#) (NOPA) was mailed to 57 community residents, interested individuals, public agencies, tribal governments, and other organizations, initiating a 30-day comment period. Ten comment letters were received during scoping and were then utilized by the ID Team to identify substantive issues and consider potential alternatives to the Proposed Action. I considered these comments and provided a response to them (refer to *Response to Comments* document, located in the project file). After reviewing public comments, as well as internal concerns raised by Forest Service specialists, a final list of issues was assembled that helped guide subsequent analysis. Issues are identified in Chapter 1 of the EA.

FINDING OF NO SIGNIFICANT IMPACT

After considering the environmental effects described in the EA, I determined these actions will not have a significant effect on the quality of the human environment considering the context and intensity of impacts (according to [40 CFR § 1508.27](#)). Thus, an environmental impact statement will not be prepared. Refer to the EA for the explanation of the Finding of No Significant Impact.

FINDINGS REQUIREMENT BY OTHER LAWS AND REGULATIONS

This decision is consistent with the [Forest Plan](#) as required by the [National Forest Management Act of 1976](#) and all other laws, regulations, and policies that govern Forest Service actions. Site-specific PDC (**Appendix A**) and Forest Plan standards and guidelines will be applied, as appropriate, to meet Forest Plan goals and desired conditions. While the Forest Service assumes no responsibility or enforcing laws, regulations, or ordinances under the jurisdiction of other governmental agencies, Forest Service regulations require permittees to abide by applicable laws and conditions imposed by other jurisdictions. The project was designed to conform to the Forest Plan and all other laws, regulations, and policies, including: U.S. Fish and Wildlife's [Endangered Species Act Informal Section 7 Consultation](#); U.S. Army Corps of Engineers' [Clean Water Act 404 Permit](#); State of Colorado's [Stormwater Management Plan](#) and [Burn Permit](#); [Executive Order 11990, Protection of Wetlands](#); and [Executive Order 11988, Floodplain Management](#).

OPPORTUNITY TO OBJECT TO THE PROPOSED PROJECT

This decision is subject to the objection processes pursuant to [36 CFR § 218.8](#) (Project-level components objection), subparts A and B. Objections will only be accepted from those who have previously submitted specific written or substantive formal comments regarding the proposed project during a comment period in accordance with [36 CFR § 218.5\(a\)](#). Issues raised in objections must be based on previously submitted, timely, and specific written or substantive formal comments regarding the proposed project, unless based

on additional information arising after the designated comment opportunities.

Incorporation of documents by reference is not allowed, except for the following items that may be referenced by including date, page, and section of the cited document, along with a description of its content and applicability to the objection: 1) All or any part of a federal law or regulation; 2) Forest Service directives and land management plans; 3) Documents referenced by the Forest Service in the proposed project environmental analysis document that is subject to objection. All other documents must be included with the objection.

At a minimum, an objection must include the following: objector's name and physical mailing address; signature or other verification of authorship upon request; identification of the lead objector when multiple names are listed; name of the proposed project; name and title of Responsible Official; and name of national forest unit(s) on which the project will be implemented ([36 CFR § 218.8\(d\)](#)).

Objections, including attachments, must be filed via mail, email, hand-delivery, express delivery, or messenger service (Monday through Friday, 8:00 a.m. to 4:30 p.m., excluding holidays) to: Objection Reviewing Officer, USDA Forest Service, Rocky Mountain Region, 1617 Cole Blvd. Building 17, Golden, CO 80401; fax: (303) 275-5134 to the attention of Objections or Email: r02admin_review@fs.fed.us. Electronic objections must be submitted in a format such as an e-mail message, plain text (.txt), Portable Document Format (.pdf), rich text format (.rtf), or MS Word (.doc). In cases where no identifiable name is attached to an

electronic message, a verification of identity will be required. A scanned signature is one way to provide verification.

Objections must be submitted within 45 calendar days following the publication of a legal notice in the [Post Independent](#). The publication date in the newspaper of record is the exclusive means for calculating the time to file an objection. Those wishing to object should not rely upon dates or timeframe information provided by any other source. The regulations prohibit extending the time to file an objection.

It is the objector's responsibility to ensure timely filing of a written objection with the reviewing officer pursuant to [36 CFR § 218.9](#), which includes: date of U.S. Postal Service postmark or shipping date for delivery by private carrier for an objection received before the close of the fifth business day after the objection filing period; agency's electronically generated date and time for email and facsimiles; or official agency date stamp showing receipt of hand delivery. All objections are available for public inspection during and after the objection process.

IMPLEMENTATION DATE

Implementation of this decision may occur on, but not before, five (5) business days from the close of the objection filing period.

CONTACT

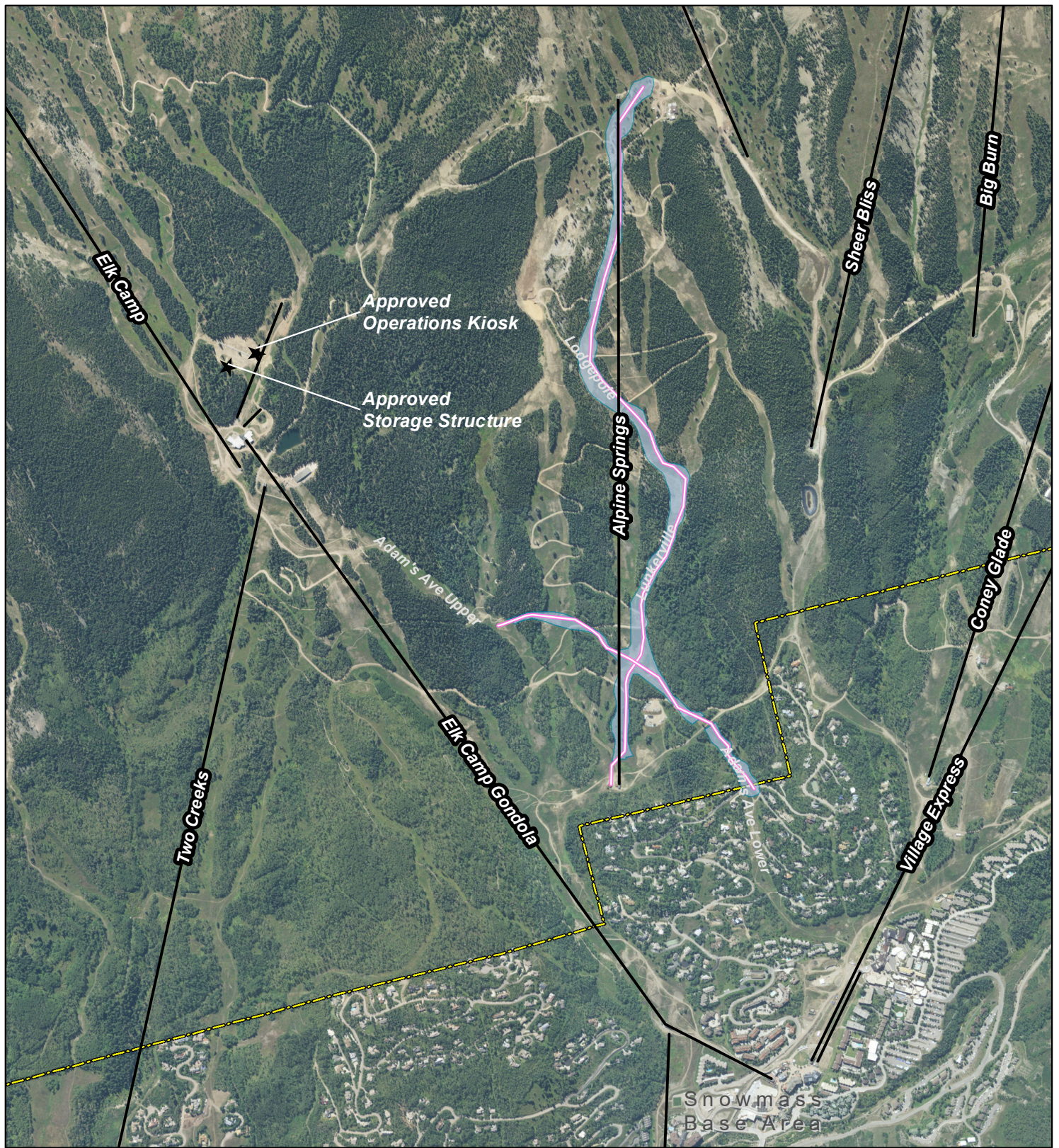
For additional information concerning this decision, contact:

Monte Lutterman
Mountain Sports Ranger
White River National Forest
mlutterman@fs.fed.us / (970) 404-3164

APPENDIX A: PROJECT DESIGN CRITERIA

PROJECT PHASE	PROJECT DESIGN CRITERIA
General	<ol style="list-style-type: none"> 1) All proposed activities and facilities shall meet WRNF Forest Plan and all applicable agency management direction (e.g., Forest Service Handbook and Manual) for all affected resource areas. 2) Prior to starting construction activities on NFS lands, ASC shall develop a Construction Implementation Plan for Forest Service review and authorization. All proposed construction methodologies and practices will be reviewed for compliance with the decision and resource management direction. This plan shall include the following information: <ul style="list-style-type: none"> • <u>Construction Management</u>: Project timelines, project contracts, disturbance boundaries, grading and site plans, staging and parking areas, waste management including reduce/reuse/recycle, construction access, and any required survey information • <u>Waste Management</u>: specific methodology for reducing, re-purposing, or recycling waste • <u>Erosion Control and Drainage Management</u>: erosion control and drainage management activities • <u>Post-Construction Revegetation and Restoration</u>: methodology, locations, vegetative mixes, and soil amendments • <u>Noxious Weed Management</u>: weed control methodologies including equipment cleaning, pretreatment, and post-construction monitoring and treatment • <u>Best Management Practices</u>: resort BMP list to be employed and adhered to during project implementation 3) ASC shall obtain all required county, town, and state permits prior to the start of construction.
Pre-Construction	<ol style="list-style-type: none"> 1) For ski trails where new snowmaking would occur, the total length of each trail exhibiting rill erosion and gully erosion shall be identified. Drainage improvements to prevent increased gully erosion from the additional runoff associated with proposed snowmaking shall be identified as required by Forest Plan Standard. 2) For ski trails where new snowmaking would occur, the total area of each ski trail where 8.5 Forest Plan Soil Standard 1 and Guideline 1 for ground cover are not met shall be identified with measures for increasing ground cover to desired levels.
During Construction	<ol style="list-style-type: none"> 1) To minimize disturbance to the intermittent stream crossing near the top terminal of the Alpine Springs lift: <ul style="list-style-type: none"> • The snowmaking pipeline disturbance corridor width shall be minimized in the area of the intermittent stream crossing • The streambed armoring shall be replaced following placement of the snowmaking pipeline • ASC shall comply with all conditions of a United States Army Corps of Engineers Nationwide Permit 12, including installing clay-cutoff walls or similar technology in the pipeline trench to prevent dewatering of adjacent wetlands • ASC shall provide written notification to the Forest Service at least two weeks in advance of installing the pipeline through the stream. • ASC shall coordinate with Forest Service personnel to mark grading limits, de-water the construction site, stockpile excavated materials and rehabilitate the crossing. 2) To protect elk calving and fawning, construction of the Elk Camp Meadows facilities shall not occur between May 15 to June 20.

PROJECT PHASE	PROJECT DESIGN CRITERIA
During Construction (cont.)	<ol style="list-style-type: none"> 3) To improve existing drainage on mountain roads and to reduce Connected Disturbed Areas in the study watersheds: <ul style="list-style-type: none"> • In the locations specified on Figure 2, improve/construct road ditches and cross drains to limit flow to ditch capacity and prevent erosion and failure. Install road-relief culverts or road waterbars at a spacing adequate for the road slope and ditch characteristics. Adhere to WRNF guidelines for recommended spacing between relief culverts. • In the location specified on Figure 2, design, implement, and maintain standards sediment control BMPs (e.g., sediment traps) at the discharge of roadside ditches. Where possible, discharge runoff into well vegetated areas, away from ephemeral and intermittent channels. 4) To manage snowmelt runoff on the ski trails proposed for snowmaking and reduce existing bare ground: <ul style="list-style-type: none"> • In the locations specified on Figure 2, apply soil amendments and Forest Service-approved seed on approximately 0.1 acre of areas of existing rill and gully erosion to foster successful revegetation and restore eroded trail surface. • Evaluate construction of waterbars on <i>Adam's Avenue</i> and <i>Lunkerville</i> ski trails • Construct ski trail waterbars to intercept and control velocities of surface runoff. Discharge waterbars through adequate BMPs for erosion control in the forested areas adjacent to the ski trail.
Post Construction	<ol style="list-style-type: none"> 1) To improve existing drainage on mountain roads in the study watersheds: <ul style="list-style-type: none"> • In the locations specified on Figure 2, inspect and maintain BMPs a minimum of twice annually: (1) in the spring, as soon as conditions allow; and (2) in the fall season, before snow covers the ground. 2) To manage snowmelt runoff on the ski trails proposed for snowmaking: <ul style="list-style-type: none"> • Implement a BMP maintenance program to inspect, clean, and repair or replace BMPs for erosion and sediment control, at least twice annually: as soon as snowmelt conditions allow; and at the end of the summer, before snow covers the ground. 3) Following implementation of the proposed snowmaking, inspect the ski trails where man-made snow applications occur during the snowmelt season to determine if BMPs are functioning as designed, or if additional BMPs are needed





Snowmass Snowmaking and Elk Camp Meadows Projects Environmental Assessment



Selected Alternative

Legend

Existing

-  Lifts
-  SUP Boundary

Approved

-  Snowmaking Lines
-  Snowmaking Coverage
-  Elk Camp Facility



**ASPEN
SNOWMASS.**

0 750 1,500'

December 2018. Prepared by: **SE GROUP**